

The Pathology of Malignant Disease of the Cervix Uteri

WITH A NOTE AS TO TREATMENT

BY

JOHN DE VILLE MATHER, M.D.

SHERRATT & HUGHES
LONDON AND MANCHESTER

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INTRODUCTION.

THERE can be no subject more fascinating to the practitioner of medicine than that of growth. Its myriads of complexities, combined with the failures of its treatment, baffle alike pathologist and clinician. So little is known, so great has been the work, that one hesitates to add opinions which may, after all, tend to obscure rather than enlighten the present knowledge.

The subsequent pages of this paper are, however, the result of observations taken from cases which have occurred in the practice of the gynæcologists of the St. Mary's and Southern Hospitals of Manchester.

To Dr. Arnold W. Lea I owe a debt of gratitude for introducing me to a subject of such great interest as cancer of the cervix uteri. To Sir William Sinclair, Drs. Lloyd Roberts, Walter, Donald, and Walls I have to tender my thanks for the use of notes, uteri and pathological specimens.


Professor Lorrain Smith I have to thank for kindly guidance in technique, and leading me to read that wonderful work of Professor Unna on malignancy of the skin. To Dr. Orr, of Prestwich, who taught me what little I know of micro-photography, and assisted me with my photographs, I wish to offer my thanks. To many others who have answered my inquiries into subsequent histories of patients I am indebted.

The whole of the work, extending over some twelve months, has been done in the laboratory of St. Mary's Hospital, for the use of which laboratory I am grateful.

J. DE VILLE MATHER.

Manchester,

February, 1906.



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CHAPTER I.

METHODS.

The methods I have employed in the microscopical sections have been largely as follows:—

Many of the uteri had been preserved in formalin for several months, or even, in some cases, years. Those which were acquired in the recent state were plunged immediately into 1 to 1,000 perchloride of mercury. By this latter means arrest of mitotic changes was secured.

After suitable fixation methods, the piece for examination was cut from the specimen by means of a sharp knife. Where possible, the situation was chosen to show normal vaginal mucous membrane, cervical mucous membrane, and the growth itself. At least two portions were secured from the uterus, as a rule more. In some, six or seven portions were taken for examination.

These were placed in absolute alcohol, after which, in generally twenty-four hours, their being dehydrated, they were placed in turpentine or chloroform. I used both with equal success. When the turpentine had sufficiently transuded the tissue—generally in thirty-six hours—the specimen was put in melted paraffin on the water-bath, from whence they were imbedded. My best results were obtained from a paraffin melting at 47°C. I began with one of a considerably higher melting point, about 56°C., but epitheliomatous cervix does not cut at its best by that method.

The celloidin method I did not employ. I occasionally froze my sections in gum.

The microtome used was a Cambridge Rocker.

With regard to my stains, I must enter a little into detail. By far the most useful was the hæmatoxylin and eosin. This method, however, acting on a hint of Professor Lorrain Smith, I found greatly improved by the aid of ammonia vapour.

The method briefly is this: After the section has been staining in logwood some twenty minutes, instead of a lengthened washing away of the surplus stain by water, the section has a solution of $\frac{1}{2}\%$ hydrochloric acid in 70% alcohol run over it. The basic hæmatoxylin excess is promptly removed, and the section becomes pale. The section is then washed with

alcohol, after which a solution of alcoholic eosin is placed on the section. When the specimen is stained apparently sufficiently, the surplus eosin removed by alcohol, the section is now held over some ammonia vapour. The result is that the excess of eosin at once comes out, the hæmatoxylin is immediately brought back into full staining vigour, and one has a section which one can govern, bringing up either nuclei or protoplasm at will.

The section is cleared and mounted in the usual way.

Another method I used in almost all cases was the acid picrin fuchsin method of Unna, as described in "Walker Hall and Herxheimer." I found the method exact and useful, and some of my photographs are taken of slides made by that method. Water-blue and orcein, polychrome methylene blue and orcein, Van Gieson and hæmatoxylin, and saffranin—these combinations I also used occasionally, but the bulk of the staining was by the hæmatoxylin eosin, and the acid picrin fuchsin.

The curettings, of which I only examined a few—between fifteen and twenty at most,—were put immediately into absolute alcohol, instead of formalin or mercuric chloride. Otherwise they were treated in the same way.

It was my practice to clear in clove oil, and mount in xylol balsam.

The methods of tracing patients was necessarily complicated. In most cases I wrote, or saw their private practitioner. The difficulties arising are great, for many have doubtless died whom I have entered as lost sight of; but, without definite proof of this fact, I have not counted them as dead.

I might add that cervix uteri is a singularly difficult tissue to cut, and presents difficulties not present in many of the other tissues of the body.

CHAPTER II.

THE NORMAL HISTOLOGY OF THE CERVIX UTERI.

With regard to the state of affairs existing normally in the cervix, I propose to briefly append the leading views. The condition of the squamous epithelium is well known, and for the sake of convenience I shall re-state it. Upon the muscular and fibrous tissue of the cervix there exists a basement membrane. Upon this, in the vaginal portion, lies a row of columnar cells. These are longer vertically than horizontally. They are well crowded together; actively proliferating. Their nuclei take the basic stains very deeply, and are slightly columnar in shape. A clear conception of the appearance of these cells is important.

Upon these cells, which consist roughly of one layer, is a mass of piled up flattened squames. The nuclei of this latter are more oval than in the basal layer. They take the basic stain less deeply. The protoplasm is fibrillated, and cell is connected to cell by intercellular bridges. This group of cells is known as the "prickle" layer from their appearance. Above them comes the strata granulosa, with the flattened horny cells superimposed. The prickle layer often in health shows marked hyalination, and small areas of liquefaction. Minute buds are occasionally seen arising with all the above characteristics; these are known as papillæ. There are no follicles to the best of my knowledge.

All this is, of course, elementary; but it is well to be borne in mind clearly with a view to the further consideration of squamous epithelioma.

Extract, "Quain's Anatomy," Professor Schäfer.

The mucous membrane of the cervix is much firmer and more fibrous than that of the body. Between the rugæ of the arbor vitæ there are numerous saccular and tubular glands. In the lower part of the cervix the mucous membrane is beset with vascular papillæ, and the epithelium is stratified; but in the upper half or more the epithelium is columnar and ciliated like that of the body. The glands, which are short, with a large lumen, are everywhere lined with columnar ciliated epithelium, even where the epithelium of the surface is stratified.

The surface of the os uteri is covered like the vaginal portion with stratified epithelium, which conceals the vascular papillæ. It is destitute of glands.

Dr. Berry Hart, in Allbutt and Playfair's "Systems of Gynæcology."

The cervical mucous membrane consists of columnar epithelium, ciliated and narrow, with the nucleus deep in the cell. Many glands of a racemose type are present, and penetrate deeply into the connective tissue.

Sir William Sinclair, in Allbutt and Playfair's "System of Gynæcology."

Between the vaginal portion, with its squamous epithelium, and the true cervical mucous membrane, with its cylindrical epithelium and innumerable gland structures, there is a narrow band where the epithelium is transitional, chiefly of a cubical form, and the glands fewer but still numerous In support of the existence of this variable belt it is said there is occasionally great difficulty in making out the line of demarcation between the portio vaginalis and the cervix.

Cullen, on "Cancer of the Uterus."

It is interesting and important to note the position of the upper limit of the squamous epithelium, inasmuch as, wherever this epithelium is found, squamous celled carcinoma may develop. The usual belief is that it ends abruptly at the external os, but from Ruge we learn that it may extend far up into the cervical canal. This likewise has been our experience, and I have been able to trace it to within a short distance of the internal os. It will be well then, while assuming that as a general rule the squamous epithelium ceases at or just within the external os, to remember that its limits are subject to much variation.

Sir John Williams, on "Cancer of the Uterus."

The uterus is divided into three parts, according mainly to the character of the epithelium, and of the glands met with in each part. The first is the vaginal portion. This is the part of the uterus exposed in the vagina. It is bounded below by the stratified epithelium covering the vaginal surface of the cervix, and above, by a line drawn from the external orifice, or a little above that point, to the insertion of the vagina. The discovery of the exact position of the original external orifice is, however, in many cases difficult, and sometimes impossible. The position of it is altered, and its characters are liable to be destroyed by tears

and by "erosions." The position of the external orifice is that place where the squamous epithelium covering the cervix ends and the transitional begins. This transitional epithelium disappears in many cases and is replaced by a glandular "erosion," which is covered by columnar epithelium, and the columnar epithelium meets the squamous of the portio vaginalis without the interposition of the transitional, and may even extend over an area which in health was covered by squamous epithelium.

From the above it will be seen that exactly how far the squamous epithelium extends is variable. In the uterus of a young child which I obtained from a girl of thirteen, the squamous epithelium extended just within the external os, and apparently the columnar cells began immediately. I was unsuccessful in finding the transitional band.

In an adult uterus, which I cut, the transition appeared to show as almost a continuation of the basal cylindrical layer, without the addition of prickles.

It was with difficulty I obtained sections showing the change, as the epithelium strips so easily from off the deeper cervical tissue.

A virginal uterus from a girl of twenty-two years showed a slight change at the junction of the squamous and columnar epithelium, in that the squamous portion became more narrowed at the junction with the columnar.

Several pieces of amputated cervix, however, with marked ectropion, I secured, cut, and examined. The result was that the squamous epithelium extended further within the cavity. In short, if there were no erosion, the tissue exposed to the examining finger was covered by stratified epithelium even if the cervix were lacerated and the ectropion well marked. Therefore I deduce that the *cervical portion exposed generally becomes covered by stratified epithelium*. From an early cancerous cervix I was able to trace the squamous epithelium almost as far as the internal os.

Another feature I defined clearly, namely, great variability in the thickness of the squamous epithelium. That is, the distance from the basal cylinder layer to the keratinised layer; this appears to vary with different individuals. But it was a noticeable fact that in diseased uteri the thickness was frequently increased.

CHAPTER III.

AN ABSTRACTION OF THE PRINCIPLES OF PROFESSOR UNNA ON
SQUAMOUS EPITHELIOMA OF THE SKIN.

For the benefit of the reader, before going through my cases, with their brief classifications, I propose to submit an abstraction of Professor Unna's paper on epithelioma of the skin. Remembering that the epithelium of the skin is virtually the same as that covering the vaginal portion of the cervix uteri, but with the addition of sweat glands and follicles, one is justified in applying the principles to the growth of the cervix.

Briefly, then, the classification is as follows:—Epitheliomata of the skin are classified according to the architecture of the growth, the types of which may be clinically and prognostically separable. These chief forms are—(1) Fungating; (2) Cylindrical; (3) Alveolar. They ignore the natural structure of the tissue, and the advancing epithelium strikes out new paths.

Opposed to this is a fourth form, which uses the already-formed lymph channels, *i.e.* (4) Carcinomatous lymphatic infarction.

The Fungating Cancers proliferate most luxuriantly, rapidly affect the surroundings, appear in neighbouring lymph glands, give origin to metastases. Histologically, their character is expressed in wide-spread equal mitoses; the epithelium becomes independent of vascular connective tissue, swells into large clumps growing in an irregular fashion, which frequently run together, so that the stroma is reduced to blood-vessels and the immediate surroundings. Not so frequent in the skin as in the softer organs. Clinically seen as nodular or tuberosus swellings.

Two sub-varieties: (a) Villous, or papillary; (b) Coarsely reticular.

The Cylinder Type. The epithelial masses grow in long columns or cylinders

Four important sub-varieties: (a) Finely reticular; (b) Simple cylindrical; (c) Acinous; (d) Styloid.

The simple cylindrical most nearly corresponds to the normal system of ridges. The definition between epithelial and connective tissue more marked than usually the case. The processes, as soon as they overstep the boundary, become purely

cylindrical. When the cylinders run together, the growth then becomes *reticular*. Here is seen free budding, which is not the case in the coarsely reticular, also the processes are more evenly thick.

(c) The acinous type shows the cylindrical processes with the active growth concentrated on the knob-like swollen ends of the process, which send off new sprouts concentrating round a centre, giving the appearance of a gland.

(d) The styloid variety shews a variety where the active growth ceases at the ends of the epithelial processes, which become pointed, acquire a frayed appearance, the result of powerful resistance of connective tissue. This is seen in the rodent ulcer.

Alveolar Form. The growth is irregular and extends from many scattered points of the new growth, due to automatic movement. Unna recognises a large and small alveolar form. There is an intimate mixing up of epithelial nests and collagenous bundles leading to a rarefaction of the stroma.

Carcinomatous Lymphatic Infarction. As in the alveolar variety, we find an outpost chain of cells, but with an extension through the open lymph tracks.

CHAPTER IV.

LIST OF CASES.

1. E.T., æt. 38, H.W.

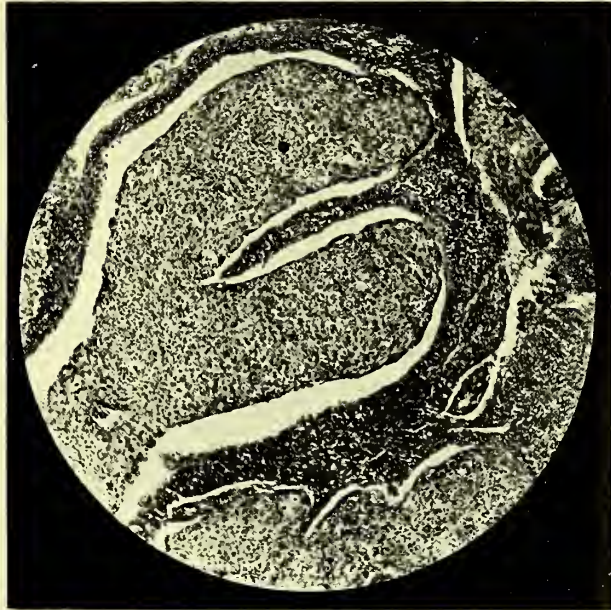
Menstruated first at 14 years of age; regular ever since when not pregnant or suckling. For the last six months since the birth of the last child she has suffered from menorrhagia. She suffered from a greenish intermenstrual discharge. Patient has had six children, and four abortions. Labours and puerperia normal. General condition poor. On examination the os and cervix are the seat of an ulcerating, fungating (cauliflower) mass. The uterus is mobile and not enlarged. Aug. 22, 1905: Vaginal hysterectomy. During the next few days the patient, who was very ill on the table, gradually sank and died. I had an opportunity of subsequently making a *post-mortem* examination upon this patient. The cause of death was exhaustion due to peritonitis; the lower bowel had become adherent to the operation wound in the vagina, and peritonitis had ensued. There was no enlargement of the pelvic glands whatever. There were no evidences of secondary deposits. The broad ligaments, however, I dissected out and have cut microscopic sections from them.

Macroscopically. The uterus was normal in size. The os and cervix were the seat of a soft friable fungating growth.

Microscopically. Transverse sections of the broad ligaments and tubes which I examined showed no cancerous infiltration. The tumour consists of a reticulum of large size made of epithelial cells. The periphery of the digitation takes the stain better than the central portion, which latter portion shows a hyaline degeneration. Further some keratin pearls are to be seen, as well as a little keratin formation. Some true cell nests to be seen. The basal cylindrical layer is well marked and is next the connective tissue. The connective tissue is well marked and seen in islands in the centre and around the digitations of epithelium. A fairly rapidly growing tumour. Some marked signs of pressure. Classified as the coarsely reticular fungating variety of Unna.

2. S.E., æt. 36, H.W.

Menstruation appeared at 16 years. Regular every four weeks for 3-4 days. Free. During the last six months suffered from metro-rrhagia. Two children. 1st, 15 years ago; 2nd, 12 years ago. No instruments. Puerperia good. No miscarriages. Patient was in perfect health until six months ago, when she commenced with a continuous coloured discharge, sometimes profuse and persisting, until the present. No brownish watery or foetid discharge. No



Case 1. Mrs. E. T.

Photograph with low power illustrating the coarsely reticular variety of the fungating type of squamous epithelioma. The processes of epithelium are chiefly made up of prickles. The dense black portion seen in the photograph is the round-celled infiltration, and is fairly typical of this class of growth.

pain, except a heavy feeling on exertion. Within the ring of the os and scarcely extending into the vaginal aspect of the cervix, except behind, is an irregular surfaced, firmish, friable hæmorrhagic growth. Vaginal fornices not involved. Uterus slightly enlarged and freely movable. Aug. 29, 1896: Vaginal hysterectomy. Steps as usual. Silk ligatures. Uterus presented a fibroid tumour on the anterior surface about a walnut in size, as well as the carcinomatous mass below the internal os. Recovery uninterrupted. Discharged Sept. 21, 1896. Patient died of recurrence some twelve months later.

Microscopically. Presents a truly remarkable appearance. To all appearance in many places the growth is perivascular, growing not unlike an angio-sarcoma. The connective tissue is a delicate wavy material with masses of round cells growing round newly-formed blood-vessels. Other portions of the growth show an appearance consistent with an encephaloid cancer. There are newly-formed delicate gland spaces, within which are a few scattered piled up cells, non-fibrillated. Another portion shows apparently definite epithelial elements, of a gland type. The whole tumour is exceedingly soft. This tumour I believe to be an angio-sarcoma.

3. S.S.G., æt. 45.

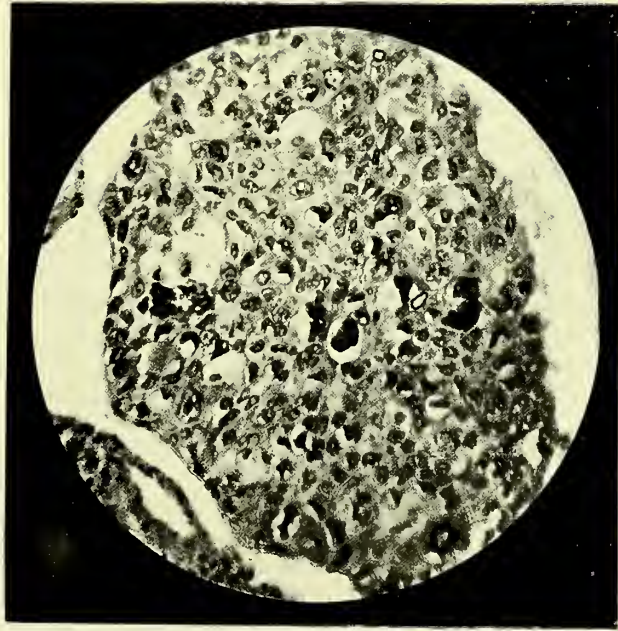
Has had 8 children. Labours normal. Puerperia good until last, in March, 1905, when patient in fourth week developed white leg. The patient suffered from acute rheumatism at the ages of 17 and 30. July 19: Patient stated her periods had returned, also complained of pain and stiffness in the lumbar region. Nodes appeared on the crest of the ilia, ends of the femur, the fibula, the left ulna, the left parietal bone. The uterine hæmorrhages, which I presume were not at all severe, continued. A vaginal examination was made, with the result a small ulcer of the external os was detected. Aug., 1905: Vaginal hysterectomy. The uterus had appeared freely movable. When, however, it came to the technique of removal it was apparently adherent by the fundus to the rectum. This posterior fundal portion with great difficulty was shaved from off the gut wall, revealing a slightly enlarged metritic uterus. The posterior portion of the fundus revealed a swelling like an egg. This swelling, quite continuous muscularly throughout, contained a cavity sufficient to hold three drams of fluid. The cavity contained broken-down tissues, debris, and fluid. The cervix revealed a slight solution of the continuity of the mucous membrane externally. This change was the size of a sixpence. Three days later the patient died. Unfortunately there was no *post-mortem*.

Macroscopically. This uterus is normal in size. The fundus anteriorly is normal; posteriorly, however, presents an appearance

similar in size and condition to a boiled egg, with top cut off and the cavity excavated—such appearance as is frequently seen in a breaking down cancerous gland. The cavity of the uterus has no connection with this mass on the posterior wall. The cervix at the outer portion is normal in size and colour. The portio, for the size of a sixpence as the epithelium turns inward, shows an ulcerated surface. This appears to be cervically a very early malignant condition.

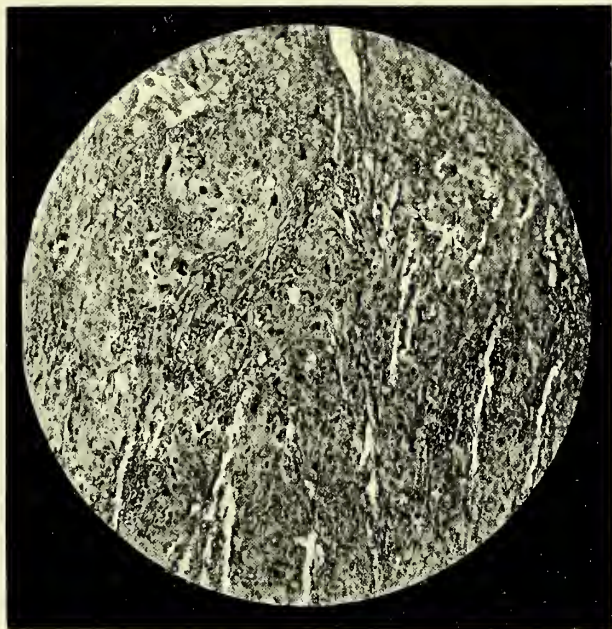
Microscopically. The cervix revealed the earliest changes of malignancy I have yet seen. The squamous epithelium begins in the usual manner and runs along for many millimetres apparently healthy. This epithelium thickens, loses its characteristics, the surface is broken and ulcerated. A little blood clot may be seen. Adjoining this damaged portion and extending for a very short distance is a fine flecking of epithelial cells, slightly reticulated. These epithelial masses consist chiefly of cylinder layer cells, and the whole appears very like a rodent ulcer. Picking up the surface, and further along appears the ordinary glandular epithelium lining that part of the cervical canal. There is some glandular proliferation, and a slight hyalin change of some of the squames. The malignant change appears to begin at the junction of the squamous and glandular epithelium, and is extremely localised. *N.B.:* There is no connection of the growth apparently with the fundus. Examination of section cut through from cavity of fundus to the cavity of the mass on the posterior wall shows—1st, In the uterine wall no connection inferiorly; 2nd, In the rectal portion of the uterine wall there is seen the finely reticular cylindrical growth of Unna; 3rd, The cells are the same variety as those of the cervix; 4th, A few kerato-hyalin pearls.

Remarks. Owing to the fact that there was no *post-mortem* this problem as to the origin of the growth can never be settled. The doctor who attended the patient is certain that a few months previously the cervix was healthy. Now, as the patient was anæmic and ailing, also showed those periosteal tender nodes, I think there can be little doubt the fundal condition was a secondary deposit. Further, that condition of cavitation with milky detritus is common to a secondary deposit. Then was this fundal condition secondary to the cervix, or to growth elsewhere? Was the cervical growth independent of all other conditions? Personally, I believe that both the cervical condition and the fundal condition were independent one from the other, and that both were secondary to a condition elsewhere. This year I have been able to find the only other case like it of a German surgeon, where cancer of the cervix was a secondary condition to growth elsewhere.



Case 4. Mrs. C. H.

High-power micro-photograph of a piece of curetting showing squamous epithelioma, and the complexity of the cells. The cells appearing black (one is seen in a space in the middle of the photograph) take the eosin very intensely, are large, and multi-nucleated.



Case 5. Mrs. M. B.

Photograph of piece of uterine wall during pregnancy which was affected by squamous epithelioma of the cervix. In between the muscle fibres will be seen long strips of squames, and occasionally prickly cells.

4. C.H., æt. 37, H.W.

Was married at 19 years of age. Has lived apart from her husband for last seven years. Has had 5 children: youngest 9 years of age. No miscarriages. Labours and puerperia good. Complains that in March, May, and July, 1905, has had excessive floodings and a slight constant intermenstrual discharge. Aug. 2, 1905: Curetting and exploration. Softish friable hæmorrhagic material found within the cervix. Aug. 4, 1905: Vaginal hysterectomy. The patient went home some three weeks later apparently well. Feb., 1906: Patient well. No return of symptoms.

Macroscopically. An exceedingly large uterus, the seat of old-standing chronic metritis. The cervix presented an astounding condition. It was fully three times the size of a normal cervix. It was lengthened and thickened. The seat of old-standing cervicitis. The case, prior to being brought to hospital, was not diagnosed as malignant. The physician to whom I am indebted for the case pronounced it malignant on exploring the inside of the cervix with a curette, where the tissue was markedly necrotic.

Microscopically. The curetted fragments consisted of well-marked prickles in large masses arranged in a coarse network. There were many giant cells. There was also a number of cells, eosinophilous and multi-nucleated, large in size, as shown in the photograph. The cells were such as only occur in squamous epithelioma. Examination of sections cut from the cervix revealed a reticular form of epithelial growth with a hyalin change. There were present characteristics both of the cylindrical and of the fungating types of Unna. The malignancy appeared to be an early one.

5. M.B., æt. 39, weaver, married.

Menstruation first at 17 years; regular. Has had 8 pregnancies; first 16 years ago, last 8 months previously. One abortion. Labours protracted; but nothing of note, and healthy puerperia. Has lost continuously since birth of last child. Pain in left side for two months almost continuously. Foul-smelling discharge for a month. Lost flesh for two months. The patient is four and a half months pregnant. The os and the cervix are enlarged to the size of an orange, and the seat of friable growth extending to the vaginal wall. April 8, 1905: The cervix and growth amputated. The fœtus and placenta removed, then hysterectomy performed by means of Doyen's clamps and Spencer Wells' forceps on the broad ligaments. May 1, 1905: Patient discharged fairly well; but a suspicious thickening in the vaginal roof. July: Patient examined. Definite hard recurrence in the pelvis.

Macroscopically. A large uterus to equal in size the gravid uterus

of five months. The lower third exceptionally friable and the seat of a soft fungating breaking down growth.

Microscopically. It is to be regretted that of the growth proper I was unable to secure a portion, its being thrown away. From a section I cut from the thinned-out lower third of the uterus a very interesting condition was to be seen. The whole of the tissue is permeated by epithelial cells, intermingled with which is a fine round-celled infiltration. There is an attempt at a reticulum of epithelial tissue, the meshes of which are filled with round cells. Many, in fact the majority, of the epithelial cells are infarcted between the muscle bundles, so that the whole appears one mass of mixed material of cancer, muscular, and connective tissue.

6. M.A.B., æt. 60, widow, H.W.

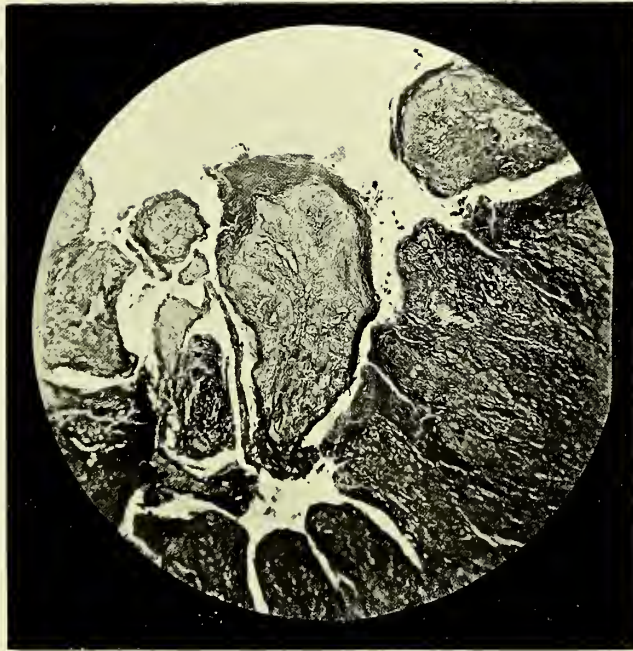
Patient ceased to menstruate 14 years previously. During the last five months she has had some bleeding from the womb on defæcation. Has had two pregnancies; the first 40 years ago, last 33 years ago. No instruments. Confinements and puerperia good. The patient complains of a bearing-down for some years, and recent hæmorrhage and discharge. On examination we found the vagina normal for the period of life; the cervix pointing vertically downwards; the anterior lip thinned; the posterior lip excavated from within the cervical cavity; but the excavation cannot be reached. Slight hæmorrhage on examination. March 9: Cervix exposed by volsellum, cavity friable to curette. March 11: Vaginal hysterectomy. April 11: Patient went home apparently cured. 1905: All trace of the patient completely disappeared.

Macroscopically. Small senile uterus. At the os is a small margin of necrosed tissue. Within the cervix is a complete area of necrosis, probably malignant.

Microscopically. The usual picture of the simple cylindrical variety of Unna. Large columns of epithelial tissue.

7. M.M., 30, married. Admitted Oct. 4, 1905. H.W.

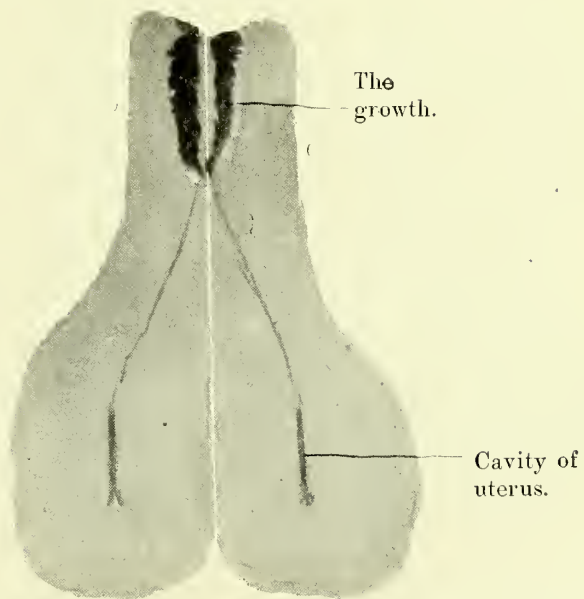
Menstruated first at 16 years. Menorrhagia for last 15 weeks. Intermenstrual discharge yellow. Pregnancies, 3; first 4 years ago, last 9 months ago. No abortions. Labours and puerperia normal. Between the second and third child patient says she menstruated three times at intervals of six weeks. After the last confinement she had one ordinary period within 3 weeks; regular after this until four months ago, when she passed some clots. Since then has been losing continuously and slightly, also a foul-smelling discharge. There has been a heavy bearing-down sensation; no pain; but has suffered from



Case 6. Mrs. M. A. B.

$\frac{1}{8}$ in. Zeiss. Showing transverse section of cylindrical variety of epithelioma, each digitation surrounded by a connective tissue and fibrous coat, as seen clearly in the photograph.

Diagram illustrating the appearance on splitting open
the uterus.



Case 6. Mrs. M. A. B.



Case 7. Mrs. M. M.

Photograph showing the kerato-hyalination of epithelioma of the cervix. The darker laminated portion is keratin; the clearer, non-staining portion is hyalin. Very little of the tissue is actually growing.



Case 8. Mrs. S. A. P.

Photograph showing the cylindrical variety of growth in longitudinal section.

boils and lost flesh for the last five months. On examination there is an excrescence of the size of an orange. Oct 7, 1905: Vaginal hysterectomy.

Macroscopically. Uterus normal in size. Cavity, slightly enlarged, contains a little blood. A nodular papillary growth from the cervix involving both lips, flattened out; the growth does not reach the internal os, and is not of the cauliflower type.

Microscopically. The section shows the simple cylindrical variety of Unna. There are to be seen epithelial columns becoming markedly hyaline. The nuclei are disappearing, and may be seen faintly on the margin of the digitations. The cells are becoming flattened, and elongated. The kerato-hyalin change is tremendous. The central portion of the tap is almost entirely keratin. The surrounding portion is undergoing hyalin degeneration. The epithelium is becoming laminated. The marginal cells, however, are all alive.

8. S.A.P., æt. 36, H.W.

Patient ceased to menstruate 4 years ago. She has had 8 children; no miscarriages. Labours and puerperia normal. Patient complains of a lump at the bottom of her stomach, which she has had for 14 years. During the last 10 weeks she has passed blood per vaginam. There has been no pain, and no wasting. Patient somewhat constipated. General conditions fair. On examination there is a small inguinal hernia on the right side. In the pelvis one finds vulva and vaginal walls normal. Cervix enlarged, nodular, ulcerated, bleeds on scraping. Uterus slightly enlarged, movable. April 9: Vaginal hysterectomy by usual methods. The patient died of symptoms resembling peritonitis on April 13, 1904.

Macroscopically. The uterus is somewhat enlarged. The cervix shows some nodular friable growth not of the cauliflower variety.

Microscopically. This section belongs to the variety Unna speaks of as the simple cylindrical variety. The tumour consists largely of columns of epithelium. The centre of the column frequently is somewhat liquefied, and I believe there is a distinct flow of lymph along the track.

9. A.P., æt. 36, H.W.

First began to menstruate at 15 years; regular every 4 weeks for 2-3 days; scanty until 3 months ago. Two confinements. Labours and puerperia good. For about three months the patient has been unwell continuously, often flooding to the extent of some pints. At times she has had a watery offensive discharge. She has had some little pain in the hips and back.

On examination. The upper part of the vagina is ballooned out

by a rather compact cauliflower growth of the cervix. Where the growth springs from cannot actually be defined. The vaginal wall in front is clear. The whole mass with the uterine body is mobile. The slightest manipulation gives rise to profuse hæmorrhage. Jan. 14: Vaginal hysterectomy: Zweifel's method. The growth was much advanced. The after history was good, and on Feb. 13 the patient returned home. Death took place from recurrence in Oct., 1897 (the same year).

Macroscopically. The uterus is freely invaded in the lower third by a cauliflower growth of large size.

Microscopically. We see the coarsely reticular type of Unna of squamous epithelioma; a well-marked cylindrical layer. No keratinisation. There are well-marked central islands of connective tissue.

10. M.A.P., æt. 55, H.W.

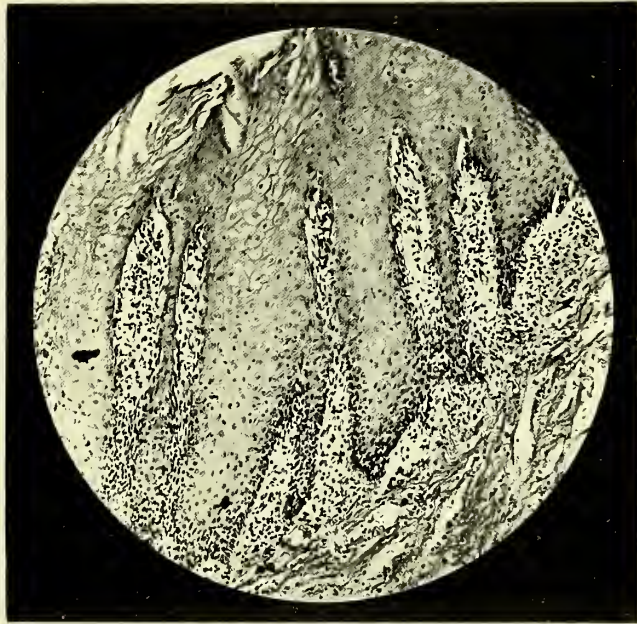
Menstruation began at 18 years. Ceased 7 years ago. Had ten children. No abortions. Labours and puerperia good. Patient began with slight hæmorrhages seven months previously. Pain in the back and left side began a week after the onset of the hæmorrhage. On examination the os is ulcerated, to the edge of the vagina. Uterus movable. May 1, 1905: Vaginal hysterectomy. The left broad ligament thickened and felt to be infiltrated. After the operation the patient fell into a very weak state, and suffered from a copious discharge. Patient went home July 15, 1905. Patient died of asthenia Aug. 15, 1905.

Macroscopically. The uterus is enlarged, much larger than normal in a woman of 55 years. The uterus is the seat of chronic metritis. The os presents an ulceration which extends but a very little way into the cervical canal. The ulceration extends slightly over to the vaginal wall. The cavity of the uterus contained a small blood-clot, the size of a small pea.

Microscopically. The tissue revealed a type of growth, classified by Unna as the finely reticular cylindrical variety. Buds of epithelial tissue can be seen springing from off the processes, the reticulum is formed by the epithelial cells, the meshes of which average four to five cells across. The basal cylinder layer is well marked. The cells are squames of the prickly layer. Mitoses are not active in the centre of the processes. One sees cells dividing comparatively freely.

11. H.R., æt. 30, H.W.

Menstruated first at 13 years. One child 8 years ago. No abortions. Has had hæmorrhage the last five months. Labour and puerperium normal. The patient menstruated every three weeks for 1-2 years.



Case 11.

Photograph of the epithelium of H. R. Though I would not submit this particular portion were necessarily malignant, nevertheless the manner of downward growth of the malpighian layer is clearly seen.

For the last five months has had intermittent floodings. A foul-smelling discharge for three weeks. No pain. Has lost flesh slightly. On examination there is found a friable mass on the posterior lip, not quite on the vaginal wall. The uterus feels enlarged bimanually. Nov. 1, 1905: Cervix amputated to remove the growth. Broad ligaments sutured with catgut, and uterus removed.

Macroscopically. The uterus appeared small in size, but without any muscular tone; the cervix was elongated.

Microscopically. On examination the normal squamous epithelium can be traced along until suddenly it thickens and sends downward sprouts of epithelium into the tissue. These sprouts consist of pencil-like portions consisting of the malpighian layer. They also demonstrate the cutting off and surrounding of islands of connective tissue. There is a large round-celled infiltration adjacent to the mass of growth, which latter also shows delicate newly-forming prickly cells. It is the cylindrical type of Unna, most probably the styloid variety.

12. C.N., æt. 43, H.W.

This patient is regular every four weeks; duration 2-3 days; small amount. Has had no special pain, but yellowish discharge for 12 months. One pregnancy, 19 years ago. Confinement and puerperium good. Patient now complains of abdominal pain. On examination we find the vagina capacious; cervix patulous and very granular and uneven. On the left side is a deep tear extending into the left fornix, and the edges of this tear are granular. At no spot can bleeding be elicited by any ordinary amount of scraping with the finger. The uterus is slightly enlarged. Nov. 16: An examination under anæsthesia was made. The cervix drawn down with a volsellum. The lining membrane of the cervix is deep red, hard, and presents slight polypoid excrescences. These do not definitely break down. A piece removed for examination. The report was somewhat unsatisfactory. Opinion tending to malignancy, but whether carcinoma or sarcoma there was some doubt. Nov. 20, 1901: Vaginal hysterectomy. Dec. 12, 1901: The patient went home apparently cured after an ordinary convalescence. July, 1905: The patient is enjoying most excellent health.

Macroscopically. A large and heavy uterus, the fundus of which was the seat of two fibromata, one the size of a tangerine orange, the other smaller. The cervix was enlarged, thickened, and appeared to be suspicious of early malignancy.

Microscopically. On careful examination we find there is no proliferation of epithelial elements, nor is there, on the other hand, any sarcomatous change. But a small polypoid condition, much infiltrated, with some inflammatory signs. The rest of the cervix is

healthy tissue. That this was a non-malignant condition is supported by the fact that July, 1905, finds the patient well and with no recurrence.

13. M.A.F., æt. 39.

A fairly healthy middle-aged woman (May, 1903). Number of pregnancies, 3. 1st, 16 years ago; last, 6½ years ago. No abortions. Labours easy; puerperia normal. During last 7 weeks a discharge of blood between the periods. During the last 4 weeks copious, constant, watery and offensive intermenstrual discharge. Has had no pain, but has been losing flesh for the last 6 months. No enlarged glands. On examination vulva and vaginal walls normal. Os and cervix enlarged with nodular and friable growth. Cauliflower excrescence. Uterus slightly enlarged and slightly fixed. May 28, 1903: Vaginal hysterectomy. The growth was spreading mostly from the posterior lip and towards the left side. Patient discharged June 20 apparently cured. Patient died April 14, 1904.

Macroscopically. The uterus was somewhat larger than normal.

Microscopically. I was unable to determine any growth in the uterine wall as the cervix had been amputated and thrown away.

14. J.J., æt. 33; H.W.

The patient was always regular every three and a half weeks for seven days. At present suffers from a constant moderate blood-stained discharge. Patient has had two pregnancies. 1st, 16 years ago; 2nd, 7 years ago. No abortions. Labours and puerperia normal. Patient complains of constant pain in the lower part of the left side, with constant discharge. Was operated upon at home in March, 1901, for this trouble. There is marked cachexia. Pain and discharge returned in three years. General health fair. Pelvic examination revealed vulva and vaginal walls lax. Cervix enlarged, soft irregular cavity within. Uterus retroflexed, enlarged and slightly fixed. March 16, 1904: Vaginal hysterectomy. April 14, 1904: Patient went home apparently cured. September 9, 1905: Patient in good health—fatter. No sign of recurrence. Disappearance of cachexia.

Macroscopically. There is a finely granular plaque on the posterior lip. A softish growth upon the anterior lip, which extends into the cavity, but not so far as the internal os. The fundus is large, heavy and metritic.

Microscopically. (a) The finely reticular cylindrical variety of Unna with a delicate connective tissue framework, as in M.E.K. Well-developed prickles. (b) In another portion one can trace the normal squamous lining along the cervix until the surface becomes

broken, then comes a small area where the bared basal cylindrical layer lies over a glandular erosion. The origin of the growth appears to be where the squamous epithelium meets the glandular.

15. M.E.K., æt. 39.

Until Christmas, 1900, the patient was regular, and enjoyed good health. Was unwell every 28 days, and the flow lasted seven days. Since that date menses gradually became irregular. Has had two full time pregnancies. 1st, 13 years ago; 2nd, living twin 8 years ago. Three abortions at two and three months. Since the birth of the twins, eight years ago, she has never been really well, but has ailed from no special disease. The last six months she has had much pain on the right side, and suffered from a discharge of blood-stained material. In general appearance the patient is pale and worn-looking. There are no signs of glandular infection. On examination the vagina is moderate in capacity. The roof is filled with a cauliflower excrescence springing from the cervix. This bleeds and readily breaks down on palpation. The uterus is freely movable. The growth does not extend to the vaginal wall. The patient has a little trouble with her urine. June 15, 1901: The excrescence removed, followed by vaginal hysterectomy by ligature. Patient made an uninterrupted recovery, and went home apparently cured on July 9, 1901. June 21, 1903: Patient died of recurrence *in situ*.

Macroscopically. The cervix is the seat of friable growth arising from both lips. The body is large, heavy, free from growth, and the seat of two fibroid growths on the right side. The whole of the growth appears to have been removed.

Microscopically. Finely reticular cylindrical squamous epitheliomatous type of Unna. Well-developed squames. Same appearance as 17. Fairly malignant condition.

16. K.A., æt. 38, H.W.

Menstruation appeared at 15 years. She was regular every four weeks, for 2-3 days. "Very free." The patient has never been pregnant. She has never missed a period, but since the 5th of March she has had some morning sickness. Subsequently there has been a coffee-coloured discharge, at times offensive. The patient states that on her way home from America she had a severe flooding, lasting two days. Her womb came down, and was replaced, and her doctor thought she might have had a miscarriage. On examination the cervix is hypertrophied, irregular from a softish cauliflower excrescence, friable, hæmorrhagic, involving especially the anterior portion. The uterine body enlarged to correspond to a pregnancy of four months. June 26, 1897: Vaginal radical operation, Doyen's

forceps. Cauliflower excrescence removed first. Vaginal incisions by cautery. Size of uterus diminished by shelling out and removing ovum and fetus. On removal the uterus shows a fibroma, the size of an orange, in the left anterior wall of the uterus. After progress perfect. Discharged well July 17, 1897. This case was lost sight of entirely, but it is inserted to preserve the completeness of a series of cases.

17. M.T., æt. 41, H.W.

Menstruated first at 15 years; last 2 weeks ago; regular every 3-4 weeks. 8 children; 4 abortions. First pregnancy 21 years ago; last pregnancy $5\frac{1}{2}$ years ago. Labours and puerperia good. For the last five months has menstruated every three weeks instead of four, and lost too much. Noticed hæmorrhage after coitus. Has suffered from pain in the back for many years; pain last few months has been worse. Suffered from yellow, offensive, intermenstrual discharge for about four months. Lost flesh for 2-3 years, but more rapidly the last few months. General condition good.

On examination. The os presents a soft, fungating, friable growth. Uterus enlarged and hard. Aug. 12, 1905: Vaginal hysterectomy. A large uterus and cervix removed by ordinary methods.

Macroscopically. The cervix is large, flattened. The posterior lip slightly more than the anterior lip shows a small papillary growth, which is soft (but not cauliflower in type). The growth does not appear greatly advanced. The cervix is enormously thickened, and the fundus is the seat of old chronic metritis.

Microscopically. With the low-power the finely reticular cylindrical variety can be seen. Cells of the malpighian layer well marked. Inter-cellular exudation most abundant. The epithelial processes are continuously intercrossing, and in places the growth is so dense it would appear that the matrix of the processes was epithelial elements. This crowding together of the cells causes them to be spindle-shaped. On other portions of the tumour well marked prickles can be seen, but no degeneration products. Microscopically this is an actively growing condition.

18. E.G., æt. 29, H.W.

Began to menstruate at 12 years. For last six months she has been losing every day. Unwell every two weeks after the last child (18 months previously). But there was no hæmorrhage between times. Previously she was regular every four weeks for five days. Quantity rather much. Five children; first nine years ago, last

17 months ago. All labours normal; puerperium normal in all. Patient complains of pain in abdomen and back. Offensive discharge from the vagina. She appears pale, emaciated, and weak. Vulva normal. Vagina filled with a fungating mass extending downwards from the cervix. Sept. 5, 1903: Vaginal hysterectomy. Patient speedily recovered, and went home without evidence of recurrence on Sept. 28, 1903. During the following year recurrence took place, with death.

Macroscopically. The uterus appeared of normal size. The growth was attacking both anterior and posterior lip; did not invade the body; was exceedingly firm.

Microscopically. The sections show the variety of squamous epithelioma classified by Unna as cylindrical, possibly the simple type. The growth occurring in columns. There are a few small keratin pearls in the centres of the processes. The connective tissue fibres are well formed.

19. H.B., æt. 45.

A fairly healthy woman up till the last 16 months, when she has suffered from metrorrhagia and menorrhagia. Has had several floodings during the last month; but no pain. Four pregnancies; good puerperia; and easy times. Is in fairly good condition. Physical examination showed the uterus somewhat fixed; it was, however, decided to operate in the hopes of eradicating the growth. The body of the uterus was normal in position and size. The cervix was slightly enlarged. Internally it was nodular, rough, excavated, and ulcerated. Bled on scraping with the finger. Dec. 17, 1902: Vaginal hysterectomy. The growth was kept well clear. Patient left the hospital in January, after an uninterrupted recovery. There was no sign of recurrence. In Jan., 1904, the patient died of inoperable recurrence in situ.

Macroscopically. Large metritic uterus. The metritis is very marked. There are three well-developed fibroids present in the posterior wall. The cervix shows a nodular eroded condition at the os. The most striking feature is the metritis.

Microscopically. A portion shows the epithelium of the section continued along until it becomes broken, then is seen dipping deeply and proliferating into the substance of the cervix. There is a polymorpho-nuclear infiltration markedly present, a dense fibrillation, and much fraying out by the cells; an increase in fibrous tissue. Type: a definite squamous epithelioma, and would be classified as a cylindrical variety of Unna. I am unable to classify it as to which form of cylindrical variety.

20. A.S., æt. 38, Charwoman.

For two years patient has been losing blood per vaginam every week. Has suffered from intermittent pain in the back during this time. The discharge has become worse this last six weeks. Patient has lost flesh the last twelve months.

On examination. The cervix presents a mass the size of a small orange, friable, extending on to posterior wall. Nov. 24: Vaginal hysterectomy. Dec. 22: Patient went out apparently cured

Macroscopically. The specimen is one of a large metritic uterus. The posterior lip is turned inwards and is the seat of a nodular papillary growth.

Microscopically. The section shows a coarsely reticular fungating type of Unna, with central islands of connective tissue within the epithelial folds. Basal cylinder layer well marked. Several of the large cells take the eosin deeply, with several intense nuclei; are well marked. The cells are chiefly prickles, and the mitoses are well marked.

21. M.T., æt. 36, H.W.

Menstruation appeared at 15 years; regular every four weeks for 5-6 days; always normal until the last pregnancy. Twelve children; first 17 years ago, last 3 months since. No miscarriages. Labours good, except the last. Puerperia fair generally. The patient was never quite well during the last pregnancy, for she suffered from a blood-stained mattery discharge, which since delivery has been more profuse, and occasionally fœtid. Complains of no pain.

On examination. The whole cervix is implicated in an irregular friable hæmorrhagic growth, much excavated, but not extending to the vaginal wall. There is some induration in the left broad ligament, close to the uterus; but the uterus and the induration are freely movable. Feb. 26, 1896: Vaginal hysterectomy. There was excessive hæmorrhage on the left side. The whole tissue was very friable. Recovery rapid and uninterrupted. Mar. 21, 1896: Patient discharged fit.

Macroscopically. Large soft uterus, the lower third of which is transformed into soft friable tissue. Note: There was some induration of one mamma.

Microscopically. This section belongs to the group of finely reticular cylindrical. There is a network of epithelial squames. An increase of fibrous tissue in the non-malignant portion of the cervix. The epithelial portion appears to be largely made up of cells of the malpighian layer. They are small, of a columnar shape, and show no fibrillation. The round celled infiltration is very plentiful, but



Case 20. Mrs. A. S.

Macro-photograph of cervix, showing a nodular condition of the posterior lip. The bent needle lies in the cervical cavity, and is seen in the lower portion of the photograph. The posterior lip is superior and occupies most of the field.

difficult to distinguish from the epithelial cells themselves. At a casual glance the section appeared as a round celled sarcoma. There were no degeneration products.

22. A.W., æt. 27, H.W.

A small, spare anæmic woman; a multipara. In the vagina is a very soft papillomatous growth of the cervix. The vagina unimplicated. The uterus small, freely movable, with considerable hæmorrhage on manipulation. Oct. 19: Vaginal hysterectomy. A slow convalescence. Dec. 21: Patient went home, with local recurrence in operation wound.

Macroscopically. A hard uterus. The cervix presents a soft friable breaking-down growth.

Microscopically. The finely reticular cylindrical variety of Unna, Marked cylindrical layer. Few prickles. Cells compressed and spindled. Shows signs of rapid growth. No degeneration products.

23. E.P., æt. 36, H.W.

Menstruation appeared at 13 years; regular every four weeks for four days; normal until March, 1896. Since then has had metro-rhagia. Three pregnancies; first 16 years ago, last 11 years ago. Labours, first instrumental; others good. Puerperia fair. One miscarriage; 9 years ago, at $4\frac{1}{2}$ months. In March, 1896, the patient began to notice a slight coloured discharge each morning. Since June there have occurred repeated floodings. In the intervals between the coloured discharges the patient suffered from a dirty, brownish, watery discharge, very offensive.

On examination. The vagina is occupied by a cauliflower excrescence, as large as a small orange, friable and hæmorrhagic. This springs from the cervix, which appears free on its vaginal aspect. Uterus movable. Oct. 19, 1896: Vaginal hysterectomy. Uninterrupted recovery. Patient went home, apparently cured, on Oct. 31.

Macroscopically. There is a hard enlarged uterus. Over the anterior lip of the cervix is a typical cauliflower excrescence. The growth extends shortly within the cervical canal.

Microscopically. Belongs to the coarsely reticular fungating variety of Unna. Well-marked central islands of connective tissue. The basal cylinder layer clearly marked, also the prickle cells distinct.

24. A.W., æt. 41, H.W.

Menstruated first at 17 years; regular every four weeks. Has suffered from dysmenorrhœa. For the last 14 months had meno-

rrhagia. Pregnancies, 7; last 5 weeks ago. Labours and puerperia normal. Patient was seen by me on April 17, 1905, for hæmorrhage before labour.

On examination. The uterus was at full time, the patient having strong pains. The cervix presented a soft, breaking-down, friable growth, and would admit three fingers. The delivery was perfectly normal, with the exception of a little hæmorrhage from the cervix. There has been pain for some months. May 26, 1905: The patient was put on the table for hysterectomy. The growth was too far advanced for operation. The growth was curetted away, and the uterus cauterised. The patient went home much relieved. In Aug., 1905, there was recurrence in situ. In Nov., 1905, patient died of cancerous cachexia.

Microscopically. An excellent example of the finely reticular cylindrical variety of Unna. The cells formed into digitations. One can clearly distinguish these delicate processes of squamous epithelium, chiefly of the cylindrical layer. Note the composite buds sprouting from off a stem. No degeneration products. The distinction from the round-celled infiltration not easily made out.

25. A.O., æt. 54, H.W.

Patient passed menopause three years. Seven children; one abortion. First 35 years ago, last 14 years ago. Labours tedious. Puerperia normal. In March, 1905, patient commenced with blood-coloured discharge, followed by foul-smelling discharge. Occasionally slight abdominal pain. Lost flesh the last few months. The os is hard, friable in the centre. Uterus not felt bimanually. Nov. 1, 1905: Patient anæsthetised, but the growth was too far advanced within the pelvis. A piece of the growth was removed for examination.

Microscopically. The section showed the cylindrical variety of Unna merging into the coarsely reticular fungating. Basal cylindrical layer is well developed. There are central islands of connective tissue, well-formed prickles, and no degeneration products.

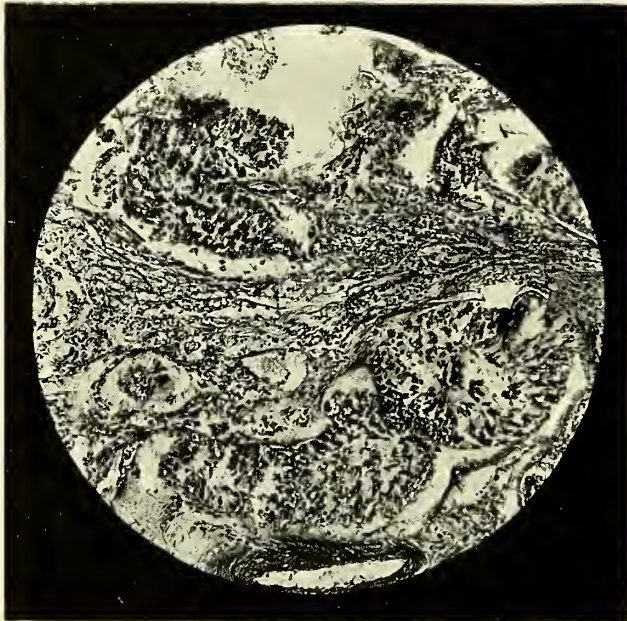
26. S.A.S., æt. 57.

Patient menstruated last 10 years previously. There were three pregnancies; one abortion. First labour very long, and was torn; second easy. Puerperia normal. Ten weeks ago she had a severe flooding. Prior to that date she had been well; but has worn a ring pessary since the birth of the first child. No pain. There is an offensive, dirty, watery discharge. Vaginal walls lax. The os and cervix torn. Inside there is a hard nodular mass. Uterus enlarged, retroflexed, freely movable. Nov. 11, 1902: Vaginal hysterectomy.



Case 26. Mrs. S. A. S.

This photograph shows a malignant adenoma. Note: 1st, the large gland spaces which are fairly normal; 2nd, the malignant gland proliferation in the upper portion of the photograph consists of small gland spaces lying closely together and actively proliferating; 3rd, in the right upper quadrant the proliferation and prolongation downwards from a healthy surface the basal cylindrical layer of squamous epithelium, as though there were an on-coming malignant epitheliomatous change.



Case 27. Mrs. A. B.

$\frac{1}{8}$ in. Zeiss. Adeno-carcinoma, showing the gland spaces filled with delicate cells, which have lost their old appearance of gland epithelium. A fine delicate connective tissue stroma, with a round-celled infiltration, clearly shown by the photograph. A typical medullary or encephaloid cancer.

The cervix enlarged by a nearly circular malignant growth, *hard in character*. The growth does not involve the outer surface of the cervix, but is confined to the wall and slightly to the mucous membrane, which in one place on the posterior lip is ulcerated in one part about the size of a threepenny bit. The thickest portion of the growth is posterior. Nov. 19, 1902: Patient became distended; vomiting; death. *Post-mortem*: All parts healthy except kink in the sigmoid flexure. No secondary deposits.

On examination. A normal layer of squamous epithelium is seen extending from without inwards to meet the columnar epithelium. At the point of junction, roughly, an entire change occurs in the tissue. A small glandular proliferation is to be seen extending into the tissues; this is shut off sharply by a distinct line of demarcation, and apparently on the other side of this line the tissue is healthy. With the high power it is seen that the diseased tissue consists of small gland spaces lined by columnar gland cells. There is further a dense round celled infiltration. The interesting features of this section lie in the sudden ingrowth and thickening of the squamous epithelium, as shown in the photograph, and in the smallness of the gland spaces. The condition is not as yet a true adeno-carcinoma.

Remarks. The sudden death of this patient was extremely unfortunate for several reasons. The growth is very early indeed, as evidenced by the line of demarcation dividing the healthy from the diseased tissue, by the absence of piled up cells within the spaces. by the smallness of the macroscopic appearances of the growth. A case such as this ought to have shown evidences of cure.

27. A.B., æt. 48, H.W.

Menstruation appeared at 17; regular every four weeks for four days; normal until 12 months previously, since when there has been 12 months' amenorrhœa with subsequent irregular discharges. Five children. 1st, 20 years previous; last, 7 years ago. Labours and puerperia good. No miscarriages. During the last six months patient has suffered from irregular discharges of a "dirty watery" character. During the same time she has had pain in her back and the lower part of her body. On examination the cervix is large, irregular, nodulated; surface friable, especially so of a small nodule springing from the cervical aspect of the posterior lip. The vaginal roof near the cervix presents some little induration, and on the left side some little irregularity of surface. May 13, 1896: Uterus found free; extirpation practicable. May 14: Vaginal hysterectomy, the ordinary steps. May 16, 17: Patient not well; exhausted; pain. Pulse, 130-150. Urine greatly diminished. For several days average

amount of urine 15 oz. daily, but patient improved with copious urinary discharge per vaginam. (Uretero-vaginal fistula.) Urinary discharge ceased two weeks later. Quantity per urethra became normal. Vaginal vault healthy. Patient discharged well June 16, 1896. Patient died of recurrence 12 months later.

Macroscopically. The uterus is large and heavy, about twice the size of a normal uterus. There is evidence of chronic metritis. The whole of the cervix uteri is eroded by a soft breaking down mass. Far more than would appear from external examination.

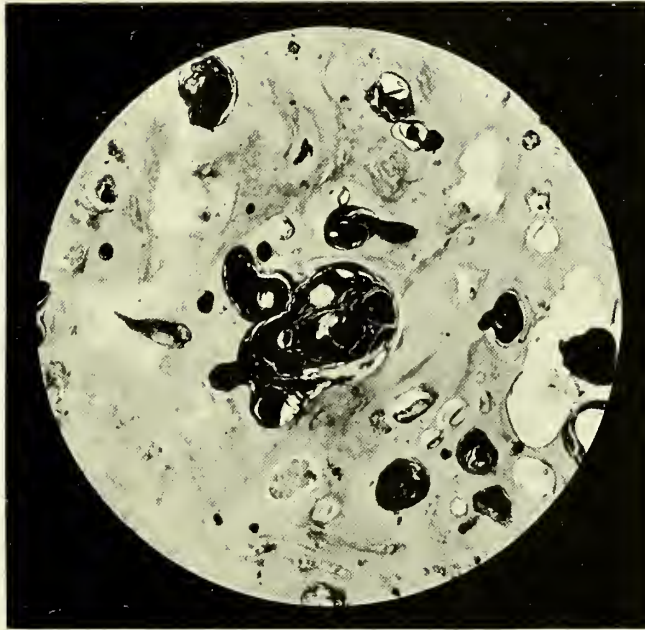
Microscopically. This is the variety spoken of as adeno-carcinoma. It is a soft encephaloid variety. One sees gland spaces, comparatively small, many of which are destroyed, others still preserved. Many of these gland spaces are filled up with atypical epithelial cells without shape or form. The cells show no fibrillation, and occur as piled up masses. The nucleus is not as deeply staining apparently as the squamous celled variety. The round celled infiltration, compared with the squame celled variety, does not appear to be as dense. The fibrous and connective tissue is thinned, delicate and wavy, the whole presenting that appearance known as medullary carcinoma.

28. F.S., æt. 64, H.W.

Patient passed the menopause eight years previously. Pregnant four times. Two children, two abortions. First, 44 years previously; last, 41 years ago. Labours and puerperia normal. Patient commenced flooding two months ago. Has had no pain, no smelling discharge. Has lost flesh for the last twelve months. Has had a prolapse since the first child. Has worn a ring pessary the last twenty years. On examination the os shows a double laceration. Bimanually the uterus not felt. (N.B.—This case was diagnosed as carcinoma body, as the os felt fairly normal.) Oct. 14, 1905: Under an anæsthetic the os was found to be the seat of malignant ulceration. A vaginal hysterectomy performed. There was some old pelvic peritonitis found present. The patient made an uninterrupted recovery.

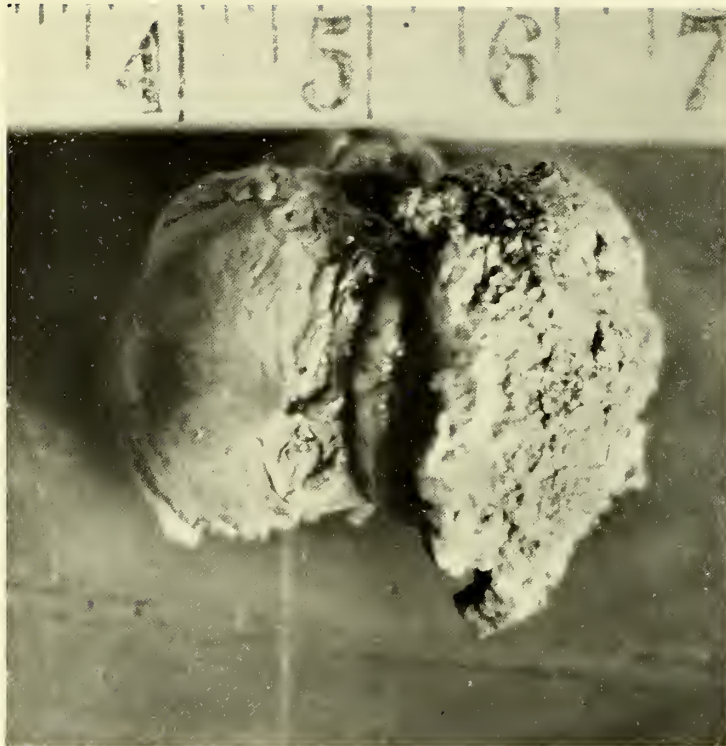
Macroscopically. The uterus is small and senile, with the exception of the lower cervical portion which is enlarged. Just within the external os, involving anterior lip chiefly, is a soft necrotic condition, only slightly marked. This case appears to be a very early case of malignancy. The cavity of the cervix is free; the fundal cavity shows slight hæmatometra.

Microscopically. This section consists of cylinders of epithelium cut transversely, which are all actively degenerating. Many of the columns are fairly staining, showing hyalin degenerations. In the centre and scattered throughout are small kerato-hyalin



Case 28. Mrs. F. S.

$\frac{1}{8}$ in. Zeiss. This section shows the whole of the epithelial elements transformed into keratin. The central portion of the keratin shows the laminations; this latter being the blackened portion. This method of staining is by the acid picrin-fuchsin method of Unna.



Case 30. Mrs. A. B.

Photograph of epithelioma of cervix. Note: this is not the so-called true cauliflower cancer. The object of the photograph being to bring out the enlargement of the body due to metritis.

pearls. The remaining portions show the epithelium completely dead and become changed into kerato-hyalin or keratin pure and simple, as seen in the photograph. The round-celled infiltration is slight. This should offer a good prognosis, for the growth was detected at an early stage. The epithelium was in a markedly degenerating condition. Further, the proliferation of cells is free and not compressed, hence in the early stages this growth is probably more superficial.

29. E.L., æt. 51.

The patient ceased entirely six years ago, but began to be unwell again last year (1902), when she saw a little each week. At Easter she had a severe flooding, and after that suffered from irregular hæmorrhages. Patient had ten pregnancies, the last 18 years ago. Confinements good except the last, which was instrumental. Present symptoms are metrorrhagia, foul-smelling discharge, and during the last six weeks pain in the abdomen. On examination we find the vagina lax, the cervix hard with an ulcerated cavity extending into the left fornix. The right fornix is indurated from an old vaginal tear. The uterus is retroverted. Dec. 21, 1901: Vaginal hysterectomy by ligatures. The disease was far advanced, and in separating the bladder from the uterus the uterine cavity was opened and some pus escaped. Jan. 13, 1902: The patient went home after an uninterrupted recovery.

Macroscopically. The uterus is larger than normal; the cervix and posterior lip is changed into a nodular mass, the nodules extending to within quarter of an inch of the fundal cavity, which latter cavity contains a large amount of pus.

Microscopically. Some seven pieces of tissue in all were examined from the external os to the fundus. A malignant adenoma is shown, as per photograph. Numbers of gland spaces lined by columnar cells somewhat flattened. It does not present the appearance exactly of an adeno-carcinoma as the spaces are not piled up with cells. The growth originated apparently within the cervix below the internal os.

30. A.B., æt. 38, H.W.

Admitted Jan. 23, 1901. The patient was regular up to Oct., 1900. Since then has suffered from irregular floodings. Has had no pain; a profuse watery discharge. Has had seven pregnancies; last, March, 1899. Labours and puerperia good. On examination the os and cervix are the seat of a breaking down cancer. The fornices are free; the uterus is movable. Jan. 29, 1901: Vaginal hysterectomy. Uterus came away easily. Convalescence steady. Patient died of recurrence March, 1902.

Macroscopically. (See photograph.) The uterus is a heavy enlarged one, the seat of chronic metritis. The cervix is enlarged to the size of a tangerine orange; the seat of a finely nodular papillary growth, involving both lips. The cavity of the cervix is apparently free from growth.

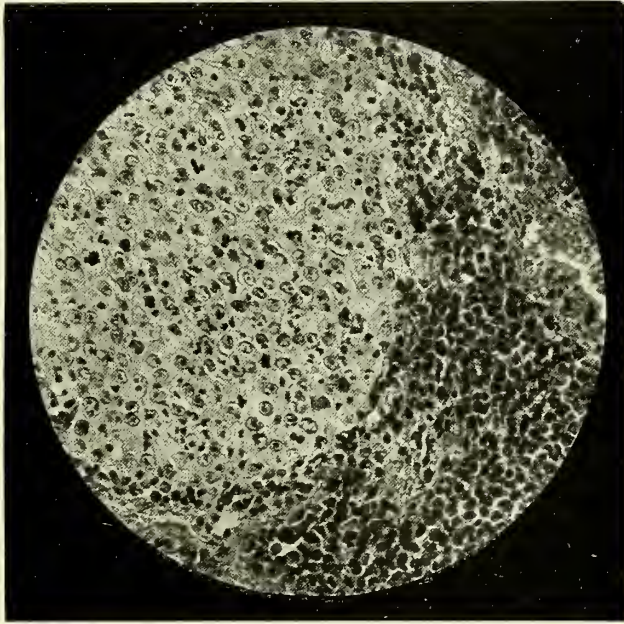
Microscopically. A finely reticular cylindrical variety of Unna, squamous epithelioma, actively growing with well-marked basal layer. No degeneration products, but some central liquefaction. Some fine delicate newly-formed connective tissue fibres. The most actively growing processes show the styloid form, the processes many of which are composed of non-fibrillated cells of the basal malpighian layer. Small round-celled infiltration in great abundance. The whole section takes the basic stain very deeply.

31. M.A.N., æt. 52,

Menstruated first at 19 years. Ceased at climacteric seven years ago. Regular every four days. Has suffered from leucorrhœa a great deal. Four pregnancies. Three children, one abortion. First child, 25 years ago; last, 16 years ago. Instruments to first baby. Puerperia normal. Patient has had whites badly for the last four months. Started with bleeding three months back, which persisted for a month. Had no bleeding since. Able to get about. Has some pain in the back. Lost flesh during the last six months. Has difficulty of micturition. Patient is a well-nourished woman, but has lost flesh. The os is surrounded (?) by a soft friable growth, which bleeds profusely on palpation. Sept. 9, 1905: Vaginal hysterectomy.

Macroscopically. The uterus normal in size. The growth is strictly limited to the posterior lip, and is slightly pedunculated; extends just within external os. Anterior lip slightly harder than normal, but free from growth. Photograph appended.

Microscopically. This section revealed perhaps the most interesting condition seen in any of my cases, namely, the occurrence of epithelioma and sarcoma simultaneously and coincidently. On examining the section with a low power there are four outstanding features—(1) a coarse reticulum of epithelial prickly cells; (2) an overwhelming mass of darkly staining large round cells of such a character as to constitute a round-celled sarcoma; (3) a definite small round-celled infiltration, as is usually found in epitheliomata; (4) an exudation of blood. The epithelial characteristics fit in with the coarsely reticular fungating variety of Unna. In between and surrounding the epithelial elements are large masses of the typical round-celled sarcoma. The sarcomatous tissue preponderates and forms also a rough reticulum growing in the spaces of which is the



Case 31. Mrs. M. A. N.

$\frac{1}{8}$ in. Zeiss high-power of section. The squames are seen clearly marked in the left side of the photograph, the round-celled sarcoma occupying the right half.



Case 31. Mrs. M. A. N.

Photograph with low power. Section showing mixed cancer and sarcoma, the lighter staining portion being the epithelial cells; the darker portion in the centre being a small round-celled exudation; the darkest and most abundant portion being a round-celled sarcoma.



Case 31. Mrs. M. A. N.

Photograph of uterus with mixed cancer and sarcoma. The growth, which is almost pedunculated, is attached to the posterior lip. The stilette is in the cavity of the cervix.

epithelioma. Within the sarcomatous tissue are masses of blood-clot. Within the epithelial elements is found a small round-celled exudation. There is a marked difference in character between the round-celled infiltration and the sarcomatous cells. With the high power the epithelial elements consist of prickles cells fairly closely packed together. There are no degeneration products. The sarcoma cells consist of round masses of protoplasm almost as large as the prickles, densely packed together. The nucleus almost fills the entire cell, and is rounded in shape. The nucleus takes the basic stain most deeply, far more so than the nucleus of the squame. At the point of junction of the two elements the squames and sarcoma cells slightly intermingle, but otherwise they each keep markedly separate. The interest of this section lies in the extreme rarity of the condition and the early stage of the growth.

32. S.H., æt. 40, H.W.

Menstruated first at 13 years; regular every four weeks; lasts a week; loses too much. Has suffered from dysmenorrhœa for some time. Always had menorrhagia from being a girl. Has had some leucorrhœa. One child; four abortions. For six months has had a slight discharge of blood between the periods. For five weeks has had a constant discharge of blood and some pain in her back.

On examination. The cervix is lacerated, and hard. Presents a friable carcinomatous ulcer extending on to the vaginal wall on the left side. Uterus enlarged, mobile, not tender. July 27, 1905: CHCl_3 . Growth found too far advanced for hysterectomy. Growth curetted away even into pouch of Douglas. The cavity packed. Aug. 23, 1905: Patient went home relieved.

Microscopically. Examination of growth removed showed the cylindrical reticular variety of Unna; a well-marked cylinder layer seen to perfection; small sprouts springing from off parent process of epithelium. In the centre of these is an epithelial pearl. A fine network of epithelial tissue, with a fairly dense round cellular infiltration; only a few prickles. No degeneration products.

33. S.M., æt. 38, H.W.

Patient was a healthy girl, and regular until marriage. Subsequent to marriage she developed a foul-smelling and persistent leucorrhœa. There was scalding micturition. The patient has never been pregnant to her knowledge; nor has she at any time missed a period. The patient states she recovered slowly from the leucorrhœa, but at times there was marked dysmenorrhœa. In Christmas week, 1904, whilst hanging a picture she was seized with severe hæmorrhage per vaginam. For this she came to St. Mary's for advice.

On examination. There was a large fungating bleeding growth involving the cervix and vagina. The uterus was fixed. No operation was considered advisable. I attended the patient at home for some twelve months, when she died. No *post-mortem* was allowed. The interest of the case lies in the fact the woman was never pregnant, and most probably suffered from gonorrhœa

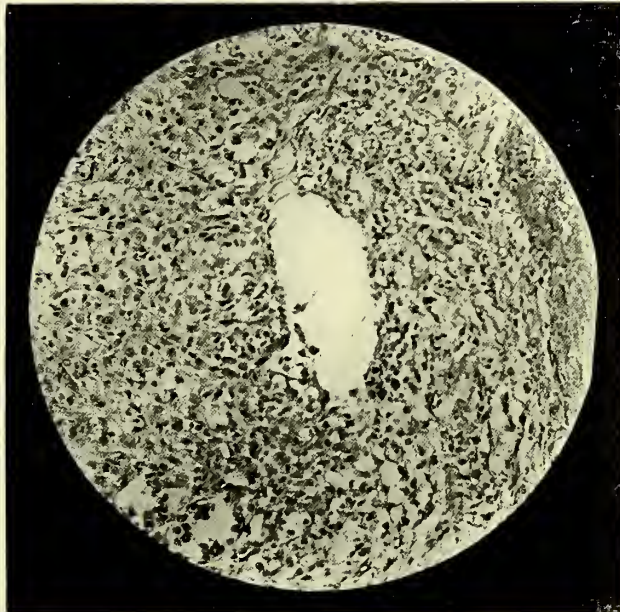
34. S.H., æt. 31.

Menstruation appeared at 15 years; regular every four weeks until last pregnancy. Menorrhagia and metrorrhagia since. Four confinements; first 1884 (twelve years previously); last 1892 (four years previously). Labours and puerperia good. No miscarriages. During the last pregnancy the patient had a slight coloured discharge every week. Since the confinement she was at first unwell every fortnight, and for about the last three months she has never been clear. There is no pain; but at times the patient's strength leaves her.

On examination. The cervix is infiltrated with an irregular-surfaced, friable, hæmorrhagic growth, granular to the touch. The uterine body freely movable. Both broad ligaments are free; but on the left side the cervical induration seems to extend very slightly. Nov. 12: Vaginal hysterectomy. Clamps: Zweifel's method. Doyen's forceps used from below upwards, after uterus had been turned outwards Gauze wrapped round the upper ends of the clamps. Vagina plugged with gauze. Two small Spencer Wells' forceps left on small bleeding points in the vagina. Lowest gauze removed (and the Spencer Wells') at end of 48 hours. Doyen's forceps removed at end of 96 hours. Upper gauze removed at end of 9 days; a little adheres to the gut. The patient was very comfortable; but the temperature was much higher than with the usual operation and after treatment. On the evening of the eighth day temperature reached 102°F. Recovery rapid after gauze removed. The patient went out under a month apparently cured.

Macroscopically. A large metritic uterus is seen. The fundus is large, and shows advanced old-standing chronic metritis. The lower third of the uterus is occupied by a papillary, fungating growth, extending downwards, apparently most marked from the anterior lip, and extending within the cervical cavity.

Microscopically. A very interesting condition is seen. The tumour is made up of delicate, small, round cells growing around newly-formed vascular spaces. In places the cells radiate outwards from the perivascular spaces. The whole section is very soft and necrotic, and takes the stain badly. I believe it to be an angiosarcoma, although in parts it is highly complex.



Case 34. Mrs. S. H.

Showing a photograph of an angio-sarcoma of the cervix. The whole section takes the stain weakly. In the centre is seen a blood space. The whole of the tumour appears to be undergoing a colliquative necrosis.

35. M.H., æt. 36, H.W.

Patient has had 7 children and 1 abortion ; first 15 years ago, the last 8 years ago. This patient ceased to menstruate two years ago, seven months later she began to lose again, and has suffered from a blood-stained discharge ever since. She is slightly wasted ; but has suffered no pain. There is a hard gland, the size of a barcelona nut, in the left groin.

On examination. The vulva normal. The vaginal walls are lax. The uterus is small and antiflexed ; fairly movable. There is a little infiltration in the left broad ligament. May 18, 1904: Vaginal hysterectomy by the ordinary steps. July 12, 1904: Since the operation there has been some dribbling of urine by the vagina. July 15, 1904: Examination under anæsthetic ; no fistula found. Vaginal walls healthy. No signs of recurrence. Tendency for a hard nodule in left side ; but the vaginal mucous membrane freely movable over it. July 16, 1904: Patient went home apparently cured. May, 1905: Death from recurrence.

Macroscopically. The fundus is slightly enlarged. Within the os is a soft mass of soft, friable material ; just without this is ring of thickened everted nodular tissue ; the anterior lip is enormously enlarged and thickened.

Microscopically. A singular and complex tumour showing epithelial cells, of a glandular type, interspersed with a fine delicate meshwork of connective tissue. The cells much altered in shape. Enormous quantity of small, round cells, but lying irregularly in the connective tissue stroma. The whole is most probably a medullary adeno- carcinoma, with much liquefaction and tissue change, possibly the result of some ferment.

36. A.A., æt. 44, H.W.

Menstruation appeared at 16 years ; was regular every four weeks for three of four days. For the last twelve months has had menorrhagia. 10 pregnancies ; 9 children ; first 25 years ago, last 7 years ago. Labours tedious. Puerperia fair, except when confined whilst suffering from typhoid fever. One miscarriage, two years ago. The patient has had a continuous coloured discharge for twelve months, with too severe floodings. When not deeply coloured the discharge is of a dirty brownish character. *She has had pain all the time*, in the back and across the lower part of the abdomen.

On examination. We find the cervix forwards and patulous. Within the surface is irregular, friable, and hæmorrhagic. The uterus is retroverted, enlarged, movable with some pain. May 1, 1897: Vaginal hysterectomy. Right ovary cystic, and hydrosalpinx.

The operation was difficult, and the growth advanced, with many adhesions. May 10: Death took place from exhaustion.

Macroscopically. A large uterus, with a cystic ovary and tube. Fundus heavy. The lower third of the uterus much invaded by a softish growth.

Microscopically. A squamous epithelioma of the coarsely reticular fungating type. Well-developed prickles; no pearls.

37. N.H., æt. 33, H.W.

Menstruated first at 14 years. Menorrhagia since Christmas, 1904. Yellowish watery intermenstrual discharge. 3 pregnancies; first 15 years ago, last 14 months ago, *i.e.*, 4 months prior to the onset of symptoms. Labours and puerperia normal. Patient says since Christmas she has been almost continuously losing blood; for three months has passed clots. Has had a bad-smelling, watery discharge for three months. A constant aching pain for six weeks in the hypogastrium.

On examination. A friable mass the size of an orange over the situation of the cervix. Oct. 6, 1905: A mass taken away for examination. The disease was too advanced to do anything but curette and cautery. There was a piece of cervix taken away; it was exceedingly soft—far softer than the usual type of growth. It fell to pieces in loculi in the hand. It was particularly foul.

Microscopically. This appears to be a soft necrotic growth. There are some masses of newly-formed spaces into which are piled up masses of cells. These cells are possibly endothelial; but the infiltration of round cells and inflammatory products is very great. There is a large amount of blood present. A peculiarity of the growth is the liquefaction which is going on among the cells. The cells are cubical or even spindle-shaped in size, and are almost in cylinder-like arrangement. There are no fibrillations within the cells.

38. S.S., æt. 41, H.W.

Patient menstruated last a fortnight previously; she is irregular. Menstruation lasts one week, and the amount is moderate. She suffers from pain in the back and the right side during her period; but a certain amount of pain is always present. There is a constant, copious, watery, offensive discharge. There has been one pregnancy, a two-months abortion seven years previously. Her general health is fair.

On examination. The vulva and vagina are normal. The cervix is enlarged, irregular, nodular, bleeds on manipulation. The uterus is heavy, and fixed. July 6, 1904: Vaginal hysterectomy and re-

removal of left appendages. On the left side there was a hydrosalpinx of the left tube. The left ovary was cystic, and the size of a Jaffa orange. There were nine small fibroids in the uterus varying in size from a pea to a small Tangerine orange. The patient made an uninterrupted recovery, and on July 30, 1904, went home without any sign of recurrence. Aug., 1905: Recurrence in the pelvis.

Macroscopically. All the above conditions are to be seen. The cervix is eroded, finely nodular, and fringed with the appearances of growth. It does not appear to be greatly advanced.

Microscopically. In a section examined one could trace the normal squamous epithelium running along into the cervical canal; suddenly this thickens and then becomes malignant. The variety of growth is the cylindrical of Unna. I have been unable to distinguish prickles, the majority of cells being of the basal cylindrical layer variety, with fibrillation.

39. E.W., æt. 34.

Patient has had 7 pregnancies; no abortions. Labours were comparatively good; none instrumental. Puerperia fair. March, 1898, had an attack of perimetritis, and was treated for the same by the hospital. In November, 1899, began with flooding, which lasted three weeks; since then, has never been free more than seven days, each period lasting three weeks. Patient does not know how long she had pain; it is chiefly in the left side.

On examination. The os and cervix presented a breaking-down, friable mass. Left fornix implicated. April 3, 1900: Abdominal hysterectomy. Uterus, tubes, broad ligaments, and ovaries removed. In removing the uterus the bladder was torn. Convalescence good. Patient went home April 26, 1900, apparently cured. Dec., 1905: Patient in perfect health.

Macroscopically. The uterus is enlarged, heavy, seat of metritis. Both ovaries slightly cystic. On the left side a small parovarian cyst. The cervix is excavated by a friable mass extending upwards.

Microscopically. One sees the cylindrical variety of Unna. Each cylinder of epithelial cells separated the one from the other by large round celled exudation, which is apparently partly becoming organised into fibrous tissue. The cylinders longitudinally consist of well-marked basal cylinder layer and prickle cells. There is a very marked hyalin and keratin degeneration. The section shows to perfection the cylindrical arrangement of the epithelium. In most of the columns the basal cylinder layer seems to be alive only.

40. C.W., æt. 40.

Patient was regular up to 12 months ago; since then menstruated every three weeks, with a duration lasting even 14 days. Had a severe flooding a week ago (Nov. 1, 1901). Number of pregnancies, 8; last 4 years ago. Confinements good, except third: instrumental. Puerperia good. Patient complains at present of menorrhagia accompanied by a foul discharge.

On examination. Vagina patulous. External os is affected all round with ulceration, the edges of which are hard and everted. The hardness extends slightly to the left fornix, but the uterus is freely movable. Nov. 2, 1901: It was found impossible to remove all the growth. High amputation of the cervix, and application of cautery to the stump. Patient made an uninterrupted recovery, and went home Nov. 14, 1901. Died July 11, 1902.

Macroscopically. The amputated cervix presents a hard, deep, excavated, ulcerated surface; unhealthy tissue merging into healthy tissue at the margin of the lips.

Microscopically. Squamous epithelioma cylindrical variety of Unna, shows the squamous epithelial lining ulcerated. Tracing this further along the continuity is broken, and deeper within the tissue is a transverse section of a digitation consisting of masses of epithelial cells. There is a well-marked cylinder basal layer of cells. Round-celled exudation small.

41. I.A., æt. 47.

Patient has never menstruated before marriage. Suffered from dysmenorrhœa after marriage, but this ceased after the birth of the child. Had had 3 full time pregnancies; 4 abortions. Bad times at her labours. Pelvic cellulitis 22 years ago after the birth of the second child. Patient now complains of metrorrhagia for six months, hæmorrhage per vaginam being the first symptom. There was no pain. Per vaginam is a nodular velvety mass, which bleeds on examination. Uterus freely movable. Oct., 1905: Vaginal hysterectomy. Patient made a good recovery. Owing to the kindness of the surgeon who sent me this case, I was able to fix it immediately and clearly make out the following.

Macroscopically. Very large uterus. Very marked metritis. Fibroid size of walnut in the right mid-fundal region. Slight hæmatometra; small sub-mucous fibroid size of pea in the cavity. Cavity freely patent to the cervix. Cervix enlarged, flattened. Os obliterated. The seat of firm, fine papillary growth, softish and friable except at one portion, which is nodular. This latter on section proved to be an ovula nabothi.



Case 41. Mrs. I. A.

The photograph shows the formation of minute cystic spaces These
latter are formed in a papilliferous manner.

Microscopically. A malignant adenoma. The whole of the cervix appeared to be transformed into adenomatous material of small cell space type. The gland spaces show papillæ as in some forms of a malignant ovarian cyst.

42. B.G., æt. 33.

Number of pregnancies, 5. Patient was a healthy woman, and regular in menstruation until 12 weeks previously (present date: Nov. 5, 1901), when she began with persistent metrorrhagia, for which she consulted her doctor. Physical examination showed uterus normal in position and size; freely movable. Cervix, uteri, posterior lip, and to the left, enlarged by friable and bleeding growth; rest of cervix small. No cauliflower excrescence. Nov. 8, 1901: Vaginal hysterectomy. Patient made uninterrupted recovery. April, 1905: Patient returned to the hospital. Stated she had had three years' complete health; but during the last few months pain in the left side of the pelvis. Vaginal examination showed the roof of the vagina occupied by dense hard fixed mass. Inoperable, being a recurrence in the scar.

Macroscopically. The uterus and cervix seemed harder than usual.

Microscopically. The type is squamous epithelioma, penetrating and infiltrating; but of a markedly fibrous variety. There is much fibrous tissue increase; many of the cancer cells are shut off and loculated. This fibrous tissue was shown up by the Van Gieson stain. There were some cell nests to be seen. This is of the class Unna speaks of as fungating, and the coarsely reticular variety. The cancer cells are simple in type; show much vacuolation. There is excess of fibrous tissue compared with many epitheliomata of the cervix. Further, the presence of cell nests and pearls indicates a kerato-hyalin formation, which would lead one to believe the condition were less malignant. Luxuriant proliferation of small cells; no great crowding of cells. Voluminous epithelial processes arranged in loops. Small islands of connective tissue and round cells, forming festoons of epithelium. One or two hyalin pearls.

43. E.L., æt. 40.

Patient has been losing constantly for five months. Has had one pregnancy. Patient complains of this constant hæmorrhage, and that she has been getting weaker of 6-7 months. Has had slight loss of flesh. Slight pain in the groins. No other discharge.

On examination. The vulva and vagina enlarged to about the size of a Tangerine orange; nodular. Uterus heavy, retroflexed, movable. July 22, 1904: Vaginal hysterectomy. Sept. 1, 1904: The patient went back to her work.

Macroscopically. A large, heavy uterus; the seat of chronic metritis. The cavity contains a suspicious material, possibly a little pus. The cavity is shut off by an inch and a quarter of cervix, then lower there comes half-an-inch of softened, necrotic material. The lowest portion enlarged and necrosed.

Microscopically. Is shown squamous epithelioma of the papillary division of the fungating variety of Unna. There are large folds of epithelial tissue composed of prickly cells, with the folds enclosing central islands of connective tissue. There is a marked fibrous tissue increase. No cell nests or pearls; no keratinisation.

Remarks. A typical true cauliflower cancer.

44. J.E.S., æt. 41.

Menstruation began at 11; irregular for a few years; regular after birth of children. Two children; no miscarriages. Labours and puerperia good. Patient complains of eight months' metro-rhagia, having four severe floodings. During the last two months has had a foetid brown discharge, and a dragging pain.

On examination. The cervix is large, granular, friable, hæmorrhagic; posterior lip especially involved. The whole circuit of os involved. The uterus fully movable. No affection of vaginal mucous membrane, but (?) some induration in left broad ligament. March 18, 1896: Vaginal hysterectomy. What had appeared to be induration of ligament was found to be fundus, whilst a fibroid the size of a golf ball affecting the right cornu had simulated the uterine fundus in normal position. Recovery good. April 11: Patient discharged apparently cured. March 8, 1898: Patient died of recurrence.

Macroscopically. A large, heavy uterus. There is evidence of some metritis. There is a fibroid about the size of golf ball at the right cornu, and there are two other small subperitoneal fibroids. The cervix is thickened, enlarged, and the seat of breaking-down friable growth involving the portio vaginalis primarily and cervix secondarily.

Microscopically. The variety known as coarsely reticular fungating; quite typical. Some little hyalination and kerato-hyalin formation. No pearls. No cell nests. A true cauliflower cancer.

45. S.M., æt. 41, H.W.

The patient was a somewhat delicate woman of middle age. Had been an epileptic the last 10 years; was slightly mentally affected. Three pregnancies; no abortions. Last labour, 1904; first labour, 1898. The labours had been good and easy, with healthy puerperia subsequently. During the past seven years her menstrual periods



Case 45. Mrs. S. M.

Photograph of cervix, showing early so-called cauliflower cancer as nodular papillæ of growth growing superficially.

had been irregular, and she had suffered from menorrhagia since Oct., 1904. This condition had become worse, and her fits more frequent. Has had some pain in back of late.

On examination. The cervix was flattened and finely nodular, and in size equalled a two-shilling piece; bleeds easily on examination. Os partly obliterated. The fundus large, freely movable. Vagina only slightly implicated. March 9, 1905: Vaginal hysterectomy. The patient ultimately developed acute epileptic mania and died, March 14, 1905.

Macroscopically. The uterus was slightly larger than normal, and showed some evidences of chronic metritis.

Microscopically. There is a definite squamous cell epitheliomatous growth extending into the substance of the cervix. At the margin of the growth is a very dense round celled infiltration. There is a great increase in fibrous tissue, and the elastic tissue seems to be increased also. A great connective tissue increase. Typical fungating, coarsely reticular variety of Unna. Macro-photograph appended. *N.B.:* This is the early appearance of the cauliflower cancer.

46. M.T., æt. 43.

Menstruation appeared at 13 years of age; regular every four weeks for three days. Four children; first 27 years ago, last 22 years ago. No miscarriages. Labour and puerperia good. The patient has been ailing for four to five months with irregular discharges, bright red in colour; also suffered from pains in the head.

On examination. The cervix is large, nodular, firm. Within the cervical canal a breaking-down mass projects, with a granular friable surface, hæmorrhagic on manipulation. Uterus normal size, freely movable; broad ligaments apparently free. June 18, 1896: Vaginal hysterectomy. Considerable extension found in the course of the operation into the left broad ligament. This could not be removed by ligaturing, so was enucleated and the cavity packed with gauze. The uterus showed two small fibroids. The progress was good, and the patient went home.

Microscopically. Is seen an example of squamous epithelioma of the finely reticular cylindrical variety of Unna. There is a fair amount of newly-formed connective tissue.

47. S.C., æt. 41, H.W.

Began to menstruate at 14 years; regular every four weeks for 2-3 days. For the last twelve months has been menorrhagic. Four children; first 16 years ago, last 3 years ago. Labours and puerperia good. For the last 15 months the patient has been troubled with a

discharge, yellowish at first, but latterly watery, foul, and occasionally blood coloured. Little or no pain.

On examination of the pelvic organs we find the anterior lip of the cervix affected by a malignant, friable, hæmorrhagic, proliferating growth. The rest of the cervix is free from growth, which does not extend on the vaginal aspect of the anterior cervical lip. The uterus is freely movable. April 25, 1896: Vaginal hysterectomy. June 1, 1896: The patient was discharged apparently cured. Unfortunately I have been unable to trace the after history of this patient.

Macroscopically. A slightly enlarged uterus with a soft mass of growth attached to the anterior lip.

Microscopically. The sections showed appearances other than usually seen. This, I believe, to be a round celled sarcoma of the cervix. There are distinct clumps of round cells, deeply staining, densely packed together, typical of the round celled sarcoma. Further, there is a fraying out of the connective tissue fibres by the round cells. Apparently no epithelial elements.

48. E.J., æt. 40

Until the last three weeks patient's periods have been regular; during the last six days she has lost a large amount. Patient has had 9 pregnancies: 5 child, and 4 abortions. Last child 13 years ago; last abortion 7 years since. Confinements and puerperia good. Five weeks ago the patient called in a doctor for a yellowish vaginal discharge and her general ill-health. Vaginal dressings were employed, and their removal was followed by a copious discharge of blood.

On examination. The perineum was found slightly lacerated. The vagina capacious; the fornices free. Cervix long. The os is filled with a soft fungating mass springing from the interior of the cervix, which bleeds readily. The fundus is soft, retroverted, movable, slightly tender; there is no swelling on either side of the uterus. Feb. 6, 1901: Vaginal hysterectomy by ligature. Nothing of note occurred, and the patient went home, apparently cured, on Feb. 25, 1901. Feb., 1902: Recurrence in situ, and death.

Macroscopically. The uterus is normal in size; somewhat harder than normal. The growth appears limited to the os, and to the posterior lip, and extending somewhat on the internal surface.

Microscopically. Squamous epithelioma, simple cylindrical in type. The newly-formed connective tissue is seen to advantage in delicate wavy outline between each cylinder of epithelial tissue. No degeneration products.

49. M.W., æt. 40, H.W.

Patient began to menstruate at 15 years. Regular every four weeks; lasts 6-7 days; loss moderate, but increasing. No pain. Blood and matter between periods for last eight weeks. Number of pregnancies, 1, 14 years ago. Labour easy; puerperium normal. Patient complains of blood and discharge. Slight pain in the right side; has had pain and tenderness for two or three years. Very painful hæmorrhoids. No glands felt. General condition good. The patient is stout. Abdominally, a little tenderness in the right iliac fossa. The vulva and vaginal walls lax. The cervix enlarged, cauliflower growth, apparently not extending to the vaginal walls. Uterus freely movable, but slightly turned to the right side. Oct. 15: Vaginal hysterectomy. Nov. 8: Patient went home apparently cured. June, 1903: Patient took to her bed with symptoms of pelvic recurrence. April, 1904: Death took place.

Macroscopically. The uterus was enlarged, heavy, showing a fibroid growth, the size of a haricot bean, in the fundus. The cavity showed pyometra. The cervical canal was obliterated; but the body was free from growth. The cervix presented a finely nodular appearance.

Microscopically. Is seen a squamous epithelioma of a soft variety. There is in parts a faint reticulum. The large part of the section is occupied by non-fibrillated epithelial cells undergoing a process of liquefaction. No keratin or hyalin change. Numerous small, clear spaces present between the cells. The round celled infiltration, but little marked.

50. M.A.D., æt. 45.

In Feb., 1900, patient ceased to menstruate, and was clear 10 months. In Jan., 1901, her periods appeared again. There was a very heavy flow, necessitating the doctor's attendance. There has been a little white discharge without odour during the last few months, but no pain. Two pregnancies; last 14 years ago. Both confinements and puerperia good.

On examination. The vulva and vagina normal. Cervix enlarged; hard at the margin, with softish material round the os, which breaks down on scraping. The infiltration extends up to, but not into, the vaginal roof. The uterus not enlarged and freely movable. April 3, 1901: Vaginal hysterectomy. April 23, 1901: Patient went home in good health. March, 1902: Patient died of recurrence.

On examination. The uterus is normal in size. The fundus shows a couple of small fibroids about the size of peas. Both anterior

and posterior lip are attacked by a papillary growth, with a soft necrotic and hypertrophied condition of the surrounding tissue.

Microscopically. On examination of section A, there is the typical appearance of the squamous epithelioma of the coarsely reticular fungating variety. The interest of the section lies in the remarkable change of the connective tissue, which is also growing apparently as rapidly as the epithelial element. There are large masses of round cells, and one is led to the view there is a possible sarcoma in addition. In fact, the matrix of the epithelial tissue appears to be sarcomatous tissue. It is not so definitely marked as the case "M.A.N."

51. M.S., æt. 52, H.W.

Menstruation first at 15 years. Was last unwell 10 years ago. Was accustomed to being unwell from 3-4 days. Four pregnancies; three miscarriages. Labours and puerperia good. Patient says that climacteric was ten years previously. Five years ago she saw a little hæmorrhage. At the end of January, 1905, she saw a fair amount of blood per vaginam, and has been losing irregularly since that date. No pain; no foul discharge; not lost flesh.

On examination. The os is slightly eroded, and it is questionable as to whether it be friable or not. July 8: Vaginal hysterectomy. Patient at the end of a week exceedingly well, and went home under the three weeks apparently cured.

Macroscopically. Uterus small and atrophic. The os slightly eroded. On opening the uterine cavity, the cervix proper was the seat of malignant ulceration limited by the internal os above. There was a very slight hæmatometra.

Microscopically. Is seen an exceedingly good example of the cylindrical variety of growth of squamous epithelioma. There is seen both the finely reticular and the simple cylindrical subdivisions. In portions of the epithelium is a slight keratin change. The growth appears to remain fairly superficial. A small round celled infiltration is present, otherwise the connective tissue reaction is not marked. There are not a great many well-developed prickles; but the basal cylinder layer is well marked.

Name of Patient.	Age.	Date of Operation	Date of Death.	Manner of Death.	Type of Growth	Remarks.
B. G.	41	Nov. 8, 1901	Winter, 1905	Recurrence	Squamous epithelioma, fungating coarsely reticular of Unna, hyalinated	Had three years of complete health after operation
E. G.	29	Sep. 1903	Sep., 1904	Recurrence	Cylindrical variety, squamous epithelioma	—
A. W.	41	May 24, 1905	Nov., 1905	Recurrence	Finely reticular cylindrical squamous epithelioma	Complicated by pregnancy
J. E. S.	41	March 18, 1896	March 8, 1898	Recurrence	Coarsely reticular, fungating, of Unna, squamous epithelioma	Had one year really free from growth after operation
K. A.	38	Nov. 26, 1897	—	Unable to trace	Cauliflower excrescence, microscopic appearance unknown	Complicated by fibroids and sole pregnancy five months.
M. S.	52	July 8, 1905	—	Living	Squamous epithelioma	This was the earliest growth one has been able to secure
A. S.	38	Nov., 1905	—	Living	Coarsely reticular, fungating squamous epithelioma	—
S. E.	36	Aug. 29, 1896	Aug., 1897	Recurrence	Unclassified adeno carcinoma, or angio-sarcoma	—
S. H.	31	Nov. 12, 1896	—	Unable to trace	Angio-sarcoma	—
A. B.	48	May 13, 1896	June, 1897	Recurrence	Adeno carcinoma.	Recurrence fairly quickly
M. A. F.	39	May 28, 1903	April, 1904	Recurrence	Growth destroyed.	Patient gained 7lbs. in first three months, then rapid recurrence and death
H. R.	30	Nov. 1, 1905	—	Living	Styloid cylindrical squamous epithelioma	—
S. M.	41	March 9, 1905	March 14, 1905	Epileptic mania, shock, post operation	Squamous epithelioma, fungating, coarsely reticular of Unna	Appeared to be early, and all removed easily
H. B.	45	Dec. 17, 1902	Jan., 1904	Inoperable recurrence <i>in situ</i>	Squamous epithelioma, cylindrical type of Unna	—
M. B.	39	April 8	—	Inoperable recurrence in vaginal scar and pelvis, July, 1905	Squamous epithelioma. The majority of cells are not prickles and are scattered in between the muscle	Complicated by pregnancy
A. O.	54	Nov. 1, 1905	—	Unable to remove all the growth	Coarsely reticular, fungating squamous epithelioma	Growth cauterised

Name of Patient.	Age.	Date of Operation.	Date of Death.	Manner of Death.	Type of Growth.	Remarks.
C. N.	43	Nov. 20, 1901	—	Living	Not malignant, merely fibroid uterus and polypoid condition of cervix.	Patient alive and well, enjoying good health
E. L.	51	Dec. 1901	—	Unable to trace	Malignant adenoma of the cervix	Prometra. Disease advanced up to fundus, but still remaining fairly superficial to the muscular tissue
M. A. D.	—	April 3, 1901	March 1902	Died from recurrence	Squamous epithelioma fungating reticular variety + ? sarcoma	—
M. T.	41	Aug. 12, 1905	—	Living	Finely reticular, cylindrical	—
M. E. J.	40	Feb. 6, 1901	Within 12 months	Died of recurrence	Squamous epithelioma simple cylindrical	—
M. A. B.	60	March 10, 1898	—	Unable to trace	Simple cylindrical variety of Unna	Resembles M. S. macroscopically
M. H.	36	May 18, 1904	May 6, 1905	Recurrence of cancer	Adeno carcinoma	—
M. A. P.	55	May 1, 1905	Aug. 16, 1905	Cachexia, never recovered from operation, signs of recurrence	Finely reticular cylindrical variety, cylinder layer very well marked	—
S. S.	41	July 6, 1904	—	Recurrence in pelvis within twelve months	Cylindrical variety of Unna, few prickles	—
J. J.	33	March 12, 1904	—	Living and well	Finely reticular cylindrical squamous epithelioma	At present time patient fatter, and no sign of recurrence
S. H.	40	July 18, 1905	—	Recurrence	Cylindrical reticular variety of Unna	Found to be too advanced for hysterectomy
E. P.	36	Oct. 10, 1895	—	Unable to trace	Fungating type of Unna, coarsely reticular	—
M. E. K.	39	June 15, 1903	June 21, 1904	Recurrence	Finely reticular cylindrical of Unna	—
E. T.	38	Aug. 22, 1905	Aug. 25, 1905	Peritonitis	Fungating type of Unna, coarsely reticular	—
S. A. P.	53	April 9, 1904	April 13, 1904	Peritonitis	Squamous epithelioma simple cylindrical	—
A. P.	36	Feb. 13, 1897	Oct., 1897	Never really free from growth	Fungating type of Unna coarsely reticular	—
M. A. N.	52	Sep. 9, 1905	—	Living	Fungating variety of epithelioma with round celled sarcoma	January, 1906, patient well, but three months too early to give a prognosis

A. A.	44	March 1, 1897	March 10, 1897	Died of exhaustion	Squamous epithelioma fungating coarsely reticular	—
M. T.	43	June 18, 1896	—	Unable to trace	Squamous epithelioma, finely reticular cylindrical	—
C. W.	40	Nov. 2, 1901	July 11, 1902	Dead, recurrence	Cylindrical variety squamous epithelioma	High amputation and not hysterectomy
S. C.	41	April 25, 1896	—	Unable to trace	Sarcoma?	—
M. T.	36	Feb. 26, 1896	—	Unable to trace	Finely reticular cylindrical squamous epithelioma	—
S. S. G.	45	Aug., 1905	Aug., 1905	Dead, peritonitis	Finely reticular cylindrical squamous epithelioma	—
S. A. S.	57	Nov. 11, 1902	Nov. 19, 1902	Dead, intestinal obst.	Malignant Adenoma	—
C. H.	37	Aug. 5, 1905	—	Living	Squamous epithelioma unclassified	Double oophorectomy performed with the vaginal hysterectomy
A. W.	27	Oct. 19, 1894	—	Recurrence within three months	Finely reticular cylindrical variety squamous epithelioma	—
A. B.	38	Jan., 1901	March, 1902	Died of recurrence	Finely reticular cylindrical epithelioma of Unna	—
F. S.	64	Oct. 14, 1905	—	Living	Cylindrical variety of squamous epithelioma, highly keratinised	—
M. M.	30	Oct. 7, 1905	—	Living	Cylindrical variety of squamous epithelioma; keratinised, but not so greatly as the preceding case	—
N. H.	33	Oct. 3, 1905	—	—	Adeno carcinoma? endothelioma?	Disease too advanced for hysterectomy
E. L.	40	July 22, 1904	—	Alive 12 months after operation	Squamous epithelioma, papillary fungating variety of Unna	—
M. W.	40	Oct. 15, 1902	April 1904	Recurrence in situ	Squamous epithelioma unclassified	—
I. A.	47	Oct., 1905	—	Living	Papilliferous malignant adenoma	—
E. W.	34	April 3, 1900	—	Recovery	Cylindrical squamous epithelioma and keratinisation of tumour	Abdominal hysterectomy double oophorectomy
S. M.	38	—	Dec. 20, 1905	—	Type unknown	No operation performed

ANALYSIS OF CASES.

TABLE SHOWING RELATION OF PREVIOUS PELVIC HEALTH
TO CANCER OF THE UTERUS.

Name,	Age.	Uterus.	Pre-existing Pelvic Disease.
M. E. J. ...	40 ...	Normal	... Harder uterus than normal.
G. A. S. ...	57 ...	Enlarged	... Retroflexion.
A. B. ...	38 ...	Much enlarged	... Seat of chronic metritis.
M. H. ...	36 ...	Slightly enlarged	Antiflexion.
A. O. ...	54 ...	Uterus not ob- tained.	
H. R. ...	30 ...	Small	... Nothing abnormal noted.
D. W. ...	43 ...	Uterus not ob- tained.	
E. W. ...	34 ...	Enlarged	... Metritis, parovarian cyst on left side. Both ovaries slightly cystic. Peri- metritis.
M. W. ...	40 ...	Enlarged	... Fibroid.
I. A. ...	47 ...	Enlarged twice natural size	Dysmenorrhœa. Pelvic cellulitis. Marked chronic metritis, fibroid.
A. W. ...	41 ...	Post-partum five weeks.	Dysmenorrhœa.
A. S. ...	38 ...	Large	... Metritis.

TABLE SHOWING RELATION OF PREVIOUS PELVIC HEALTH
TO CANCER OF THE UTERUS.

Name.	Age.	Uterus.	Pre-existing Pelvic Disease found.
E. G. ... 29	Normal	... None.
M. B. ... 60	Small, Senile.	... None.
M. S. ... 52	Small, Senile.	... None.
E. L. ... 51	Large	... Old standing metritis, (pyometra due to the growth).
S. S. G. ... 45	Larger than normal.	Chronic metritis.
A. B. ... 48	Twice the normal size.	Marked chronic metritis.
S. M. ... 41	Larger than normal.	Seat of chronic metritis.
M. A. F. ... 39	Larger than normal.	
S. H. ... 31	Large	... Chronic Metritis.
S. E. ... 36	Enlarged	... Seat of fibroid tumour the size of a walnut.
A. A. ... 44	Large	... Cystic ovary and hydro- salpinx.
F. S. ... 64	Fundus senile, cervix enlarged.	Procidentia for 20 years, old pelvic peritonitis, and has worn a ring pessary for the last 20 years.
M. B. ... 39	Patient is 4½ months pregnant.	
E. P. ... 36	Hard, enlarged ...	
E. T. ... 38	Normal	...
S. A. P. ... 53	Enlarged	... ? Metritis.
J. J. ... 33	Large, heavy	... Marked chronic metritis.
A. P. ... 36	Enlarged by the growth.	

TABLE SHOWING RELATION OF PREVIOUS PELVIC HEALTH
TO CANCER OF THE UTERUS.

Name.	Age,	Uterus.	Other Disease found present in the Uterus, &c.
H. B.	... 45 ...	Enlarged	... Metritis, three fibroid growths.
M. A. N...	52 ...	Normal	... Nothing.
M. E. K...	39 ...	Larger than normal.	Seat of two fibroid growths
M. A. P...	55 ...	Larger than normal.	Seat of chronic metritis.
J. E. S.	... 41 ...	Enlarged	... Seat of fibroid tumour size of golf ball.
C. W.	... 40 ...	Uterus not ob- tained.	
S. S.	... 41 ...	Enlarged	... Nine small fibroids in uterine wall, left hydro- salpinx, left ovarian cyst size of a Jaffa orange.
S. C.	... 41 ...	Slightly enlarged.	
C. H.	... 37 ...	Enlarged	... Heavy metritic uterus. The cervix three times the normal size.
E. L.	... 40 ...	Much enlarged	... Retroflexion, marked chronic metritis.
M. T.	... 36 ...	Large, soft	... Recently Pregnant.
K. A.	... 38 ...	Pregnant 4½ months	Fibroma size orange present.
M. T.	... 43 ...	Enlarged	... Two small fibroids.
B. G.	... 33 ...	Uterus and cervix exceedingly hard.	
M. T.	... 41 ...	Enlarged	... Seat of old chronic metritis.
M. M.	... 30 ...	Normal	...
N. H.	... 33 ...	No uterus ob- tained.	
M. A. D...	45 ...	Normal	... Seat of two small fibroids.
A. W.	... 27 ...	Hard	...
S. H.	... 40 ...	Not obtained	... Menorrhagia and dysmen- orrhea from girlhood

TABLE SHOWING RELATION OF PREGANCY TO CANCER.

Name	Age	Number of Children	Number of Abortions	Character of Labours	Character of Puerperia	Remarks.
E. W...	34	7	0	Good	...	Good
D. W...	43	1	5	Instrumental	...	Unknown
H. R...	30	1	0	Good	...	Good
A. O...	54	7	1	Tedious	...	Good
M. H...	36	7	1	Good	...	Good
A. B. ...	38	7	0	Good	...	Good
S. S. ...	57	3	1	1st long and was torn.	Good	
E. J. ...	40	5	4	Good	...	Good
M. A. D.	45	2	0	Good	...	Good
N. H...	33	3	0	Good	...	Good
M. M...	30	3	0	Good	...	Good
M. T...	41	8	4	Good	...	Good
B. G. ...	33	5	0	Good	...	Good
M. T...	43	4	0	Good	...	Good
K. A. ...	38	0	(1?)			Patient pregnant at time of operation.
M. T. ...	36	12	0	All labours good except last, tedious.	Fair	
E. L. ...	40	1	0	Good	...	Good
C. H. ...	37	5	0	Good	...	Good
A. W...	41	7	0	Good	...	Good Pregnant through- out all time growth present.
S. C. ...	41	4	0	Good	...	Good
S. S. ...	41	1	1	Not known.		
C. W...	40	8	0	Instrumental	Good	
J. E. S.	41	2	0	Good	...	Good
M. A. P.	55	10	0	Good	...	Good
M. E. K.	39	3	3	Bad time at twins.	Good	
M. A. N.	52	3	1	Instruments to first, then very easy times.	Good	
H. B. ...	45	4	0	Very easy times.	Good	

Name	Age	Number of Children	Number of Abortions	Character of Labours	Character of Puerperia	Remarks.
A. P. ...	36	2	0	Good	... Good	
J. J. ...	33	2	0	Good	... Good	
S. A. P.	53	8	0	Good	... Good	
E. T. ...	38	6	4	Good	... Good	
E. P. ...	36	3	1	1st forceps...	Fair	
M. B. ...	39	8	1	Protracted...	Good	Pregnant 4 months at time of opera- tion.
F. S. ...	64	2	2	Good	... Good	
A. A. ...	44	9	1	Tedious	... Fair	Was once confined when suffering enteric fever.
S. E. ...	36	2	0	Good	... Good	
S. H. ...	31	4	0	Good	... Good	
M. A. F.	39	3	0	Easy	... Good	
S. M. ...	41	3	0	Easy	... Good	
A. B. ...	48	5	0	Good	... Good	
S. S. G.	45	8	0	Good	... Good	Good until the last, when suffered from white leg.
I. A. ...	47	3	4	Bad	... Bad	
E. L. ...	51	10	0	Last with forceps	Good	
M. S. ...	52	4	3	Good	... Good	
M. A. B.	60	2	0	Good	... Good	
E. G. ...	29	5	0	Good	... Good	
M. W. ...	40	1	0	Good	... Good	
A. W. ...	27	2		Nothing further known.		
S. M. ...	38	0	0	—	—	
S. H. ...	40	1	4	Nothing further known.		

Of 35 hysterectomies known and proved to be malignant, 24 are dead.

Of these 24,

6 died from the operation.
18 died from recurrence.

Of these 18,

1 lived 4 years after operation.
1 lived 2 years after operation.
1 lived $1\frac{1}{2}$ years after operation.
12 lived 1 year after operation.
1 lived $\frac{1}{2}$ year after operation.
2 lived $\frac{1}{4}$ year after operation.

Of the 6 who died from operation,

1 died of epileptic mania.
3 died of peritonitis.
1 died of intestinal obstruction.
1 died of exhaustion due to continued ill-health.

Of the 11 cases alive and well after operation,

1 was well and cured 5 years after operation.
1 was well $1\frac{1}{4}$ years after operation.
9 were well under 1 year of operation.

ANALYSIS OF TABLES.

	Cases.
Chronic metritis was present in.....	15
Fibroid growth was present in	10
Pregnancy was present in	3
Ovarian cystoma was present in.....	3
Peritonitis and cellulitis were present in.....	3
Retroflexion was present in.....	2
Pyometra was present in	1
Senility was present in.....	4

Five were completely normal. The remainder were irregular in size and density of tissue.

Of some 51 cases examined,

	Cases.
Squamous epithelioma occurred in.....	37
Gland cancer occurred in.....	5
Endothelioma occurred in	1
Sarcoma occurred in	3
Sarcoma and epithelioma occurred in.....	1
Non-malignant	1
Growth not obtained.....	3
Total.....	51

In some 51 patients there were 255 pregnancies, making an average of 5 pregnancies per woman. This could hardly be termed excessive child-bearing.

Further, it will be seen that, at most, in some 51 cases only 6 complain of having really difficult pregnancies.

The conclusion of the above two analyses leads one to imagine that perhaps both factors are not so great as has been imagined in the causation of cancer of the cervix.

A PAIN ANALYSIS.

Though it is a well-recognised fact that in growth of the cervix pain is always a late symptom, I insert the following analysis of some 50 cases:—

- 25 gave a history of no pain.
- 19 gave a history of pain.
- 6 gave no history, either positive or negative.

Of these 19 cases,

- 6 showed well-marked chronic metritis.
- 2 showed fibroid disease.
- 1 showed an ovarian cyst.
- 1 was an early growth, *i.e.*, the sarcoma and epithelioma and the pain is unaccounted for.
- 1 was cured after five years by hysterectomy.
- 8 were too advanced to remove all growth.

CHAPTER V.

THE RELATION OF PRE-EXISTING DISEASE OF THE UTERUS TO
CANCER OF THE CERVIX AS AN ÆTIOLOGICAL FACTOR.

It has long been recognised that cancer of the cervix occurs practically always in women who have been at one time or another pregnant. There are exceptions to this fact, one of which I have shown. Therefore some condition must result from the pregnancy which terminates in the uterus becoming from almost immune to greatly susceptible. After careful examination by many observers little has been noted of great value. Many great gynaecologists have held, and still believe, laceration of the cervix to be a cause. As a preventive measure to a large degree Emmet brought in his operation for the repair of the cervix, and it has been thought the repair of all lacerations would tend to decrease the disease known as cancer. To speak from my own observations, I have noticed several significant facts, solely from the examination of the uterus after operation, and from clinical histories of the patients. Firstly, on careful persistent questioning of the patient a history of pelvic trouble extending over many years can frequently be elicited, indefinite in many cases, ignored in more, and frequently dating from a puerperium or an abortion. Thus not a few have given the symptoms of retroflexion with erosion, of old-standing leucorrhœa, of dysmenorrhœa as a constant occurrence, and whilst one has to discount much, nevertheless there is no doubt a condition of ill-health has existed.

Now with regard to my figures, I have examined 45 uteri with cancer of the cervix, in 10 of which fibroids were present in a greater or lesser degree. With regard to this condition, and as to whether the cancer and the fibroid grew together, I can offer no opinion, but during 1905 Piquand wrote a detailed paper on the subject of cancer of the uterus and fibroids, and some of his views I shall briefly mention. He holds that cancer of the cervix occurs more frequently in women with fibroids than in women without fibroids, also cancer of the cervix with fibroids occurs most commonly in multiparæ between 45 and 50 years. Again, of my cases chronic metritis was present to a marked degree in 14. In others there were cystomata of the

ovary, peritonitis and other evidences of old pelvic mischief; so that in 45 cases only five uteri and appendages were healthy. One is forced to the conclusion that in the great majority of cases cancer of the cervix is a terminal condition to chronic disease. Though it is well known, with regard to other portions of the body, that pre-existent irritation is a great factor in predisposing to growth, one had no conception it was so markedly the case in cancer of the cervix. Whether the theories of Ribbert or Bashford be true I cannot say, but certainly it appears to be a rare condition for malignant disease to occur in a tissue which has previously been healthy when that tissue is the cervix uteri.

CHAPTER VI.

THE PATHOLOGY OF UTERINE CERVICAL CANCER.

Cancer of the cervix of the uterus is a disease occurring in women commonly between the ages of 30 and 50 years. It is characterised by the classical symptoms of hæmorrhage, discharge, at a later date pain, and ultimately death. The etiology, as of all cancerous growths, remains as yet undiscovered. The theories regarding its cause are many, some sound, others ridiculous. It is not my intention to enter into any discussion for or against many of the theories propounded, nevertheless I shall put down my observations and possibly further offer a hypothesis.

Briefly mentioning some of the theories put forward, they consist of the following:—Firstly, it is a noticeable fact this disease practically always occurs in women who have been pregnant. There are cases on record of nulliparæ suffering from cancer of the cervix, and of my cases I am pleased to be able to show one. Of this one I shall speak later. Heredity is now being regarded as a less important factor; whether or not some of us have the cancerous inheritance remains to be proved. There are of course distinct examples on record where heredity appears to have entered into the condition. The age of onset is most generally between 25 and 65 years; cases occur at a later date, and there are some of an even earlier age than 25 recorded.

Depreciation of vital power is put forward as a factor, and certainly the disease occurs at a period when the individual appears to begin to approach the menopause, and the vigour of life is diminishing. It is also claimed that cancer of the uterus is more common among the lower classes, and is a “*morbis miseriarum*.” This I believe to be a fact.

Excessive child-bearing is given as another important factor.

Cuthbert Lockyer gives an average pregnancy of seven, of my own cases the average was five per patient.

Laceration and injury to the cervix have also their place amongst the supposed predisposing factors. Chronic erosion is also looked upon as a predisposing cause; and there is no doubt in many of my cases there had been previous erosion of the

cervix. Thus many observers believe a persistent erosion is the forerunner of a malignant ulcer of the cervix, and no doubt some cases occur; but when one thinks of the enormous numbers of chronic ulcerations of the leg persisting for many years which never become malignant one may surmise that this is not so common a cause as might be supposed.

One German observer considered gonorrhœal infection of the uterus was a predisposing cause in many cases. This view, however, has been largely discredited. With regard to this, I must, however, state that my one case occurring in a woman who had never been pregnant was one in which the patient had suffered from gonorrhœa.

I shall refer now briefly to the principal symptoms. The symptoms of cancer of the cervix when the woman usually comes to the physician for advice, judging from the cases one has observed personally, appear to be as follows:—

Hæmorrhage as a gradual increase of the normal flow; hæmorrhage during pregnancy; hæmorrhage after the climacteric, occurring as either severe flooding or a slight show of blood; hæmorrhage on coition; some few complained of hæmorrhage on defæcation, and some few as a severe flooding which came on between the menstrual periods whilst undergoing unusual exertion.

Leucorrhœa frequently is a concomitant symptom; in fact, it may be the first. A recent American observer holds that leucorrhœa practically always is the first symptom of malignant growth of the cervix. If it be as I believe, that pre-existent disease is most often present, then the leucorrhœa will probably have been present for some time. Should the cancer be fairly horny in type, and hæmorrhage not have been noticed, then leucorrhœa is a most noticeable feature. The growth exudes a juice, there is also irritation of the parts, and thus an offensive watery discharge is an almost classical feature. The discharge may be blood-stained, grumous, or serous, and occasionally it is non-offensive. This latter, however, is only when the growth has been kept scrupulously clean by antiseptic douches. Friability with hæmorrhage on examination is another pathognomonic symptom. Pain, one may say definitely, is a late symptom unless there be some other condition as well as the cancer of the cervix. When pain ensues in cancer of the cervix the growth is practically always inoperable.

Before one proceeds further it is essential that one should have a clear idea as to the various types occurring. Clinically

and pathologically speaking, the types are slightly different. Sir William Sinclair, in "Allbutt and Playfair's System of Gynæcology," gives, for convenience, a division, as thus: He divides the growth into that which affects the cervix proper and that which affects the vaginal portion. He states that in most of the cases he has seen the vaginal portion was affected. Certainly of my fifty cases the vaginal portion was always attacked.

Of the growth affecting the portio-vaginalis we have the cauliflower mass, the eroded ulcerated variety. To clearly show the varieties as understood at the present day I append the following tables. It is thus seen that, speaking generally, we recognise squamous-celled epithelioma and glandular carcinoma. Up to a certain stage all observers are largely agreed, but there comes a point at which observations seem to cease.

Lewers, in his work on cancer of the uterus, recognises five clinical varieties—(1) cauliflower excrescence; (2) hard, slightly raised plaque; (3) nodular variety; (4) conical ulcer; (5) atypical form.

Jellett, in his "Practice of Gynæcology," divides cancer of the cervix thus:—

1. A papillary or proliferating form, in which a warty, cauliflower-like mass is found projecting into the vagina. This is usually a squamous celled growth.
2. An ulcerative form, in which the malignant growth, starting in the cervical canal, has extended outwards.
3. A nodular form, in which the disease starts as one or more small kernel-like masses in the cervical tissue.

Galabin, in his work on the diseases of women, divides cancer of the cervix into two varieties pathologically:—

1. That form arising from a proliferation of gland epithelium in the cervix.
2. From the ingrowth of processes of the squamous epithelium.

Glandular cancer, he states, may begin by a simple exuberant proliferation of the glands; but it is seldom that the cancer is detected early enough for examination at the time. Soon a departure takes place by proliferation of epithelium into masses, many cells deep, which project into and occlude the

lumen of the gland. Next masses of cells invade the cellular tissue, so that solid masses are seen in it. In the cervix uteri the growth does not long retain the definite glandular type which is seen in cylindroid carcinoma or adeno carcinoma of the body of the uterus. Even in an early case, it is generally only here and there that a piece of nearly normal epithelium or glandular lumen can be seen to indicate the mode of origin of the growth. The main part of it is made up of cemented cell masses without any glandular lumen. In many cases such masses alone can be seen, and the diagnosis from squamous epithelioma is made mainly by the shape of the cells approximating more to the columnar than the usual squamous type. At this stage the growth is called columnar celled epithelioma.

Galabin's Division.

1. Cancer arising from gland epithelium.
2. Cancer arising from squamous epithelium.

Sir William Sinclair's Classification.

Cancer of Portio-vaginalis.

Originating in :

1. Small nodules deep in the tissues of vaginal portion, and the squamous epithelioma still unbroken.
2. A shallow ulcer of the vaginal portion.
3. Nodule or nodules within the os externum underlying the mucous membrane.

Cancer of the Cervix proper.

Originating in :

1. Cells of cervical glands.
2. Scirrhus variety.

C. Hubert Roberts' Classification.

Cancer of the Cervix.

1. Squamous-celled epithelioma.
2. Glandular or columnar-celled epithelioma.

Cullen recognises the same distinction.

The Varieties of Carcinoma of the Cervix.

Classification according to clinical features.	Forms.	Origin.	Position.	Progress.
CARCINOMA progresses rapidly ; produces metastasis ; affects connective tissue rapidly.		From cervical epithelium of constricted cervical glands. (Klebs)	In substance of cervix.	Produces thickening then ulceration.
		From plugs of the deepest layers of squamous epithelium on vaginal aspect of cervix. (Waldeyer.)		
		From connective tissue cells of cervix. (Virchow.)		
EPITHELIOMA. progresses slowly ; does not produce metastasis ; preads by extension	Flat canceroid	From the cubical epithelium of cervical canal. (Klebs.)	Superficial within the cervical canal	Excavates cervix
		From plugs of the deepest layers of squamous epithelium on vaginal aspect of cervix.		
	Papillary	From the deepest layers of squamous epithelium of vaginal aspect of cervix. From connective tissue cells. (Ruge and Veit.)	Superficial outside of cervix.	Spread downwards into vagina.

Table extracted from Hart and Barbour's "Manual of Gynæcology."

From a brief glance at the preceding sheets it will be seen that, speaking generally, a unanimity exists amongst the leading authorities of malignant disease of the uterus that there are two varieties, namely, adeno-carcinoma, encephaloid, tubular or glandular cancer, which arises from the columnar epithelium of the cervix proper or the epithelium lining its glands; and the epithelioma or squamous-celled cancer of the portio-vaginalis and cervix. And thus far good enough, but little observation seems to have been devoted to the minute differences of these growths.

It is said of anæsthetised patients that no two are ever alike, and this truism might also be well applied to cancer of any type. The variations are wonderful in their complexity, but I shall endeavour to show later on that there are actual varying types of the same growth which do definitely occur.

Clinically there are differences. One recognises the familiar cauliflower variety, then the necrotic ulcerous variety. There is a fine papillary variety which is the predecessor of the cauliflower variety, as seen in the photograph of Mrs. S. M. (Case 45). Then again, and less common than the previous one is the variety which shows little externally beyond the fact that

there is some slight ulceration of the vaginal portion, and within the cervix there is a great breaking down of tissue. Then again we have an early condition seen where the cervix is hard and nodular, and shows little, but one finds later it to be the seat of malignancy. Then again there is the rarer form, where the cervix is large, hard, and feels like a solidified orange—the scirrhus of the cervix. And yet of these one finds described but two histological types.

Now microscopically there is given the differentiation into glandular adeno-carcinoma and squamous epithelioma. I have been unable to discover whether anyone goes deeper. Some observers have noted whether there has been much or little fibrous stroma, but, speaking generally, I think I am correct in stating that the histological anatomy of the cancers of the cervix has not been carefully worked out. Let me quote from Sir John Williams' classical Monograph:—"Cancer is usually classified into scirrhus, encephaloid or medullary, and epithelioma. This classification has no value and little meaning as far as the uterus is concerned."

Roger Williams states that he considers 90 per cent. of cancer of the cervix are glandular in type. Cullen's experience was that the great majority of cancers of the cervix were squamous epithelioma, and but a few glandular. His actual figures are 123 cases of squamous epithelioma, and 18 of adeno-carcinoma. With these figures I entirely concur. I have seen some 37 cases of squamous epithelioma and 5 cases of adeno-carcinoma. This older view, that cancer of the portio-vaginalis is the rarer condition, I cannot understand. Sir John Williams, Bowerman Jessett, and Roger Williams all speak of the frequency of carcinoma as against epithelioma.

Jessett, in his Brompton lectures, states that the disease rarely originates in the vaginal portion, and adds, this statement is borne out by Ruge, Veit, Schroeder, John Williams, Leopold, although the disease frequently invades the part by growth from the cervical portion.

Jessett notes the similarity between an erosion, an adenoma, and carcinoma. He believes growth of the cervix frequently starts from an erosion. Now, I would admit a columnar-celled carcinoma will sometimes begin on the sight of an erosion; but the vast majority of growths, in my opinion, and seen by me (and I have nearly seventy to hand), are squamous epitheliomata, and, further, have occurred in the vaginal portion of the cervix, or more correctly, in that portion of the cervix lined by squamous epithelium.

Now, it would appear to me this so-called columnar-

celled cancer seen so often by Williams, and arising within the cervix, is more often a type I have observed arising from the malpighian layer. These cells present a columnar appearance and do not go in for keratin formation. Furthermore, when one sees them so intermingled with the glands at first they appear to be glandular in origin. This, however, I believe not to be the case. I hold that adenocarcinoma of the cervix is less common, as in my cases.

Further, I cannot fully agree with regard to the fact which Sir John Williams leads one to believe, that growth of the *cervix proper* is generally glandular cancer, against squamous epithelioma of the portio-vaginalis. I would agree that growth of the portio is practically always squamous; but then, as Sir William Sinclair points out, few cancers of the cervix do not involve the portio-vaginalis, and it is my opinion that cancer of the true cervix is most frequently squamous-celled in growth. One thing is striking and noticeable in cancer of the cervix, and that is, the change of the epithelial cell. It does not retain its original appearance. Unna pointed out a similar fact in skin cancers.

Thus an epithelial cell frequently appears columnar, and yet this cell is not the columnar glandular epithelial cell. It merely indicates that pressure may have taken place, and the tumour is of a rapidly-growing nature. Then, again, the cells of the basal layer closely resemble the columnar epithelium lining the internal surface of the cervix further along the canal. Confusion has reigned rampant over the conditions found in epithelioma of the cervix. One meets cases described of glandular cancer of the cervix occurring together with squamous epithelioma. When one realises the intense difficulty one had at first in differentiating the forms of growth, one can easily understand the error.

Further, the rapidly-growing primitive protoplasmic element found in these cancers is possibly prone to metaplasia. It is a cell of great potentiality, to a certain extent amœboid, and it apparently can assume many forms. And whilst I would dogmatise on the lesser frequency of glandular cancer of the cervix, I would, on the other hand, suggest that there are forms of epithelioma which do occur where neither the formation of horny material and prickles on the one hand, nor glandular elements on the other, are the most striking features; and that there are cases of cancer of the cervix which consist of proliferating masses of epithelial cells, which grow most atypically. And this, no doubt, tends to explain their tremendous malignancy.

Another fallacy, pointed out by Unna in skin diseases,, and which applies equally to uterine cancer, lies in the fact that, if a process of epithelial tissue undergoes central liquefaction, and then becomes tubular in appearance, this is often mistaken for a cancerous mass of gland cells.

Bearing all these facts in mind, one can examine the tumour growth more surely as to whether it be glandular cancer or squamous epithelioma; and I trust I have made one point clear—that in most cases, namely, glandular and squamous epithelioma of the cervix are clearly distinguishable and separable entities however far advanced the growth.

When regarding a piece of cancerous tissue there are certain factors which must be ever clearly kept in mind. Thus, the ideally most atypical cancer cell is merely a mass of protoplasm with a nucleus without any resemblance to cell differentiation. Though an approach to this condition is attempted by some malignant growths yet practically the cell attains some resemblance to gland-forming epithelium or to squamous epithelium. Thus, in the squamous epithelioma of the most primitive type we find some elements of its type, prickle cells, keratin, cell nests, absolutely no attempt at gland formation. And in the columnar-celled carcinoma we find always an attempt to gland formation. But though as epithelial cells are descended from this primitive (gamitoid) type, and one would expect that primarily one could not distinguish between columnar-celled carcinoma and squamous epithelioma in their primeval condition, yet in actual practice this can generally be done. Many observers have stated that in cancer of the cervix uteri after the growth has been progressing for some time this distinction cannot be made out. I would respectfully submit that the differentiation, with care, can always be recognised with certain reservations.

The reason of error, however, lies in the following facts:— Firstly, when the squamous epithelioma shows masses of apparently columnar cells, that is, cells of the rete malpighi these have been often mistaken for the gland epithelium. Secondly, as Sir John Williams shows, where squamous epithelioma is growing over an erosion (Case J.J., No. 14) there is a dense gland proliferation from the erosion, and the squamous tissue invades the glands, and apparently one sees a glandular cancer as well as a squamous epithelioma. This is usually quite a common condition. Thirdly, rate of growth is an important factor in determining the shape of a cell.

A far greater cause of error, and one excusable to a certain degree, and another reason which leads me to understand how

the statement arose that in the advanced stages of cancer of the uterus carcinoma and epithelioma are indistinguishable lies in this fact: In adeno-carcinoma, when the growth is advanced, the gland element is overwhelmed by the masses of cells which are proliferating. This I found in the section Case no. 27. Looking at this section, I must confess for a long time I was in doubt into which division to classify this. I subsequently found a markedly proliferating gland element, but in one portion of the growth, where the eye met nothing but cells without gland formation, I was at first nonplussed until I realised that the fibrillary element of the protoplasm present in the prickle cell of the squamous epithelioma was absent in this adeno-carcinoma cell. And so it is in all these cancers, the gland cell keeps to its own physiological peculiarity however embryonic it appears at a first glance. Again, as I have seen often, in cancer of the cervix the complexity of the growth is great; this is evidenced in the fact that I show cases of mixed sarcoma and cancer, angio-sarcomatous tissues and epithelial growths of a particular complex nature. Now, as there is little difference morphologically between the non-fibrillated cells of the basal malpighian layer and the columnar cells lining the mucous membrane of the cervix, and, further, as I have shown that in ectropion cervicis there is a horny layer, it can be understood that some gland cancers can show squames (this, I believe, has been a proven fact some time). It is excusable that some perplexity may arise with regard to allocating a cancer as squamous or glandular, but these complex varieties of cancer are not common, and, further, the complexity does not permeate the whole tumour—at least to the best of my knowledge in my own sections.

I have endeavoured to show at some length that glandular cancer and squamous epithelial cancer occur in very different proportions; that, generally, they are distinguishable. That however far advanced they may grow, they at anyrate nearly always show that the major part of the tumour remains according to its type. Further, I have explained the various causes for error, and added certain reservations.

I do not credit that glandular and prickle-celled cancers can grow together; nevertheless, in the uterus there is a class of tumour which presents most puzzling features. Cases occur which present a most complex appearance. Briefly, however, let us review the appearances seen in malignant adenoma, adeno-carcinoma, or the so-called gland cancer of the cervix. It occurs, we are told, and I believe correctly, as a nodule in the cervix. At first this nodule is hard, but ultimately breaks

down. This nodule may have spread some way within the cervix before the process of destruction and breaking down is apparent. Such was the condition in Mrs. S. S. G., Case no. 3, and had evidently been so in Mrs. M. H., Case no. 35. I believe, however, that it is impossible with our present knowledge to determine clinically as to whether the growth be squamous or glandular; perhaps the hæmorrhage is not so great in the glandular cancers. The growth apparently originates from the glandular epithelium of the cervix, either from the surface, or from a gland. I have not been able to determine the starting point in any of my sections. In the case of Mrs. S. S. G., there was a proliferation of glands in a similar method to that seen in ovarian cysts. The glandular epithelium protruded into the lumen of a glandular space, the process sending out branches which appeared to unite with one another and form gland spaces. Should the glands remain proliferating as glands, the condition resulting is malignant adenoma. Should the epithelium continue to proliferate, then the gland spaces become filled with piled up masses of cells, which in their turn destroy the gland space, and this, I imagine, constitutes the adeno-carcinoma. Now, so far so good, but in many of my sections I was unable to determine this. In the case of Mrs. S. there were present several normal healthy glands, superimposed upon these, however, were many exceedingly small gland spaces, and small areas of proliferating epithelium; but nowhere in the tumour was I able to recognise a condition similar to the papilliferous condition of case S. S. G. Thus, apparently, there was a different method of growth going on.

Again, in the case of Mrs. E. L., Case no. 29, there was an altogether different appearance. From cervix to fundus was a growth, actively growing (yet not deeply involving the muscle), consisting of large gland spaces. A glance at the photographs shows the diversity of conditions. There were no papillary branches of epithelium here; the whole of the tumour presented this wonderful appearance of spaces and surrounding connective tissue.

Going from this to the case of Mrs. B., Case no. 27, there was a variety of growth exactly corresponding to the teaching of medullary adeno-carcinoma. A soft, delicate meshwork of connective tissue holding together masses of epithelial cells, which here and there showed a definite gland formation. Therefore, I think it will be clearly seen that a great difference occurs in the gland cancers themselves, and the examination of cervical growth is more than a mere "histological exercise."

Let us for a moment briefly refer to the squamous epithelio-

mata of the cervix. Cullen, I find, recognises three macroscopic stages, so-called, as a question of degree for convenience : (1) Hardness and induration of the cervix, but without any loss of tissue; (2) Moderate disintegration of the cervix; (3) Extensive or complete involvement of the cervix.

Now Cullen holds that in the final stage the surface of the mucous membrane is unbroken. Now I cannot always agree with this, because in a number of cases the disease, beginning, I think, where the squamous meets the columnar epithelium, the earliest appearance seems to be ulceration. I think there are cases which can be shown where the growth is exceedingly early and has apparently begun as an ulceration. One would imagine, in the first instance, there was an unbroken surface, but in these intra-cervical conditions, which note, macroscopically are not the cauliflower cancers, and are distinguishable microscopically also, the first appearance appears to be an abrasion of the surface.

Now while the great majority of squamous-celled cancers invade the portio-vaginalis, there are a number which in their earlier stages are strictly intra-cervical. In the case of Mrs. C. H., Case no. 4, externally there were no signs of malignant disease, and in that of Mrs. M. S., Case no. 51, which was exceedingly early, the growth was just beginning to show as an ulceration. Now I insert this note because, with regard to the so-called cauliflower squamous epithelioma, the classification of Cullen is accurate, but falls slightly short with regard to the intra-cervical varieties.

Squamous epithelioma of the cervix then begins as a change in the squamous epithelium, which at first may grow outwards and superficially or remain flat and grow more deeply. The superficial growth macroscopically occurs as papillary projections which grow downwards, are soft, easily necrotic and form the true cauliflower growth. At the first stage they are more superficial, but they appear to soon invade the glands, and doubtless this accounts for the view held by many clinicians that this variety is the most malignant. This variety I hold to be largely the same as Unna's fungating variety, and I do not intend to go further in their description, beyond saying they consist of folded masses of epithelium, branching and interweaving, forming coarse nets, and present all the usual signs of superficial inflammation, ulceration and leucocytic infiltration, the epithelium consisting of well-developed prickles, is prone to hyalination and the formation of small true pearls.

The flat, non-vegetable-like growths, however, occur more

often within the cervical canal, occasionally in the portio-vaginalis. Within the canal they completely encircle the cavity; the lining area appears to be changed into a necrotic growth. This can be discovered by the curette if there be no external evidence of growth. With regard to this latter fact, however, by the time the patient has come for treatment the portio-vaginalis is usually involved. The growth, however, seems to be more invasive than apparent; clinically this is shown by the way a cervix will crumple up under a volsellum, which was apparently clamped in cervix and not in growth. This class of growth, I believe, fits in with Unna's classification known as cylindrical, of which all his sub-varieties may be seen to be present. This class of growth, again, presents well-developed prickles, but in a certain percentage of cases the growth appears to approach a senility, to undergo enormous keratin changes; this is shown in cases 7, 39, 51. These changes, however, I do not regard as true pearls, but which appear to permeate the epithelium from the surface. This change in the epithelium I believe to be of the greatest value clinically.

One has next to realise there are squamous epitheliomata which are distinct and separate in their type. Thus one may have proliferations of the prickle layer, or again of the rete malpighi. Now the rete malpighi is a more primitive layer than the prickle layer, and, if one may argue so, has greater potentiality of malignancy, for the reason it is more atypical. Hence the epithelioma arising from the basal malpighian layer and not going on to early prickle formation is less given to horn formation, and accordingly ought to present different clinical characters, in that it is softer, less defined, quicker in growth.

Now, further, I cannot agree with what the majority of observers speak of—most carelessly, in some cases—as “cell nests.” In Cullen's most admirable book on cancer of the uterus, he shows an excellent diagram of what he considers is a cell nest. I regret that such is not my opinion of cell nests as occurring in cancer of the cervix. What is most frequently shown as a cell nest is a transverse section of a column of epithelial tissue, which is in no way a cell nest. Such so-called cell nests I have frequently traced through a piece of tissue. Cell nests, pearls, and the like, are really strangely uncommon in cancer of the cervix, at least compared with epitheliomata of other tissues. The true epithelial pearl is a very small condition.

A true cell nest is a similar occurrence, and the keratinised columns of growth seen in T.S. in Cases 7, 39, 51, are not

horny pearls; nor have the T. S. of the cylinders of growth been cell nests.

It is said that the cervical squamous epithelium is normally poor in keratin, hence the poverty of keratin pearls. Possibly such is the case. I am not sufficient physiologist to contradict the statement. On the other hand, I would briefly call attention to how keratin may be formed in cancer of the cervix.

Firstly, it may be formed within epithelial processes, chiefly of the fungating variety, having been constructed by the cell in the usual physiological manner in the attempt of the cell to attain after its normal type. Again, the epithelium may become senile to such an extent that almost the whole of the tissue becomes converted into non-malignant masses of keratin. Were the condition to occur wholly, it would be interesting to note whether the malignancy would cease altogether, and thus to constitute one of those cases of spontaneous cure of cancer which some men still hold can occur. Further, we find not uncommonly eleidin granules within and occasionally between the cells. Now, certainly the condition of keratin formation in bulk does not seem to be common. I noted it in Case 4. But in those cases in which it did occur it was most marked.

The question now arises, and from it a most interesting point in the treatment of malignancy, what governs this change from actively-growing epithelium into non-growing keratohyalin material? Is it an internal secretion? Is it this condition of senility which is brought about by the administration of thyroid extract, by removal of the ovarian tissue? It is all pure hypothesis, no doubt, but one cannot but be struck by the remarkable change which occurred in those sections, and it appears to open out a field for much work.

It is difficult tersely to give one's own opinions on the pathology of any part. At the end of a year's work one is far more careful and diffident of offering an opinion on a microscopic slide than one was at the outset. There is far more in the examination of a section than the mere diagnosis as to whether it be glandular or prickle-like in its form. Therefore, bearing in mind the various points of complexity, I shall leave the tables to speak for themselves. Regarding a somewhat rough classification of the forms of growth, also with the Unna classification as basis, or rather guide, I have come to certain definite opinions; these latter, however, are based entirely upon what I have seen in my own sections.

The true cauliflower epithelioma is a fungating cancer, largely superficial and in the early stages does not extend deeply into the

tissue; it appears to grow fairly rapidly. In these stages it is a papillary, finely nodular condition arising from the cervix. Clearly note, however, the papillary growth has no connection with the papillæ of the epithelium, which are different entirely, both in appearance and manner of growth. This variety, of which I have some eleven cases, presents, as do all the others, the fairly classical symptoms of cervical cancer. Microscopically, it consists of well-developed prickles. In the architectural classification of Unna, I believe, it falls into the fungating variety, being either papillary or coarsely reticular. It occasionally shows horny pearls, also a hyalin degeneration; on the other hand, I found no section which went in for extensive keratinisation of the greater amount of the growth as I found in the cylindrical varieties.

The round-celled infiltration of leucocytes is always well-marked. It is not my intention to go into their appearance, but they are always clearly distinguishable. Now this true so-called cauliflower cancer of the cervix appears from my observations to recur fairly regularly after removal. I believe this to be due to the fact it attacks the glands early in its advance. It appears to be slower of growth, however, at the seat of attack, and, further, appears in its earliest stages to be highly superficial.

Then comes a class of growth which macroscopically I am unable to classify; it presents all the usual known symptoms. Microscopically, however, there are few prickles, rather are there masses of epithelial cells, squamous but not fibrillated, which show no keratin or hyaline changes, rather a colliquative process. The connective tissue appears to obey no known rule for growth, the whole being soft and homogeneous. The tumour appears to have been rapidly growing. It is this class of growth which presents the great difficulties of squamous epithelioma of the cervix. On examination it seems to show every variety of epithelial cell. It can be put in no clear group; if shown to two pathologists they each offer an entirely different opinion. In places the tumours will show a fine squamous network, in other portions the predominating influence seems to be a round cell, which it were difficult to say were epithelial; in places newly-formed glands are to be found, in others bundles and masses of squames. And, whilst I have not been able to show a variety of growth corresponding to that which Unna calls alveolar, I have little doubt that such occur.

We know so little about the condition known as cancer that these varieties act as a distinct set back. Personally, I have no doubt that the uterus, as with the testicle and the ovary,

presents most wonderful divergencies in its normal growth, and hence it would tend to explain its complexity when abnormal growth has to be considered.

With regard to *endothelioma* of the cervix, in some 50 cases I met one which most nearly corresponds to this condition. Macroscopically, it appears to resemble a fungating growth with the usual classical symptoms. Histologically, it is difficult to differentiate from certain forms of epithelial growth. The cells often resemble squames. They form a reticular arrangement. I believe, however, with improved knowledge of growth this variety would be found to be slightly more frequent in the cervix than is generally imagined.

Sarcoma of the cervix, though a rarity in cervical growth, I met some few times. One case I believe to be a round-celled sarcoma. Macroscopically the tumour was exceedingly soft, loculated and foul. Microscopically the tumour consisted of small round cells in great abundance invading the surrounding tissue. Two cases occurred of what I believe are angio-sarcoma. These cases were viewed by the Professor of Pathology of the Victoria University, who considers them to be of this nature. Here, again, there was little distinctive to the naked eye. Microscopically the growths were exceedingly soft of a necrotic nature. They consisted of round cells or even spindles actively proliferating which were growing and radiating from newly-formed blood-vessels. Both tumours appeared to have grown rapidly, and were distinctly malignant in character, as shown by the after history of the patient. The case of mixed cancer and sarcoma was very interesting. Macroscopically, the growth was early, and the best description is obtained from viewing the photograph. Owing to the extreme rarity of the condition it has an especial interest.

In conclusion, one may say the great difficulties were not so much determining whether a growth were glandular or squamous, so much as whether the growth were epithelial or connective tissue in origin. There can be no doubt that where both tissues are actively growing, and in such an organ as the uterus which develops late and is prone to such changes as necessitated by pregnancy, that great anomalies of growth must be expected. Thus an enormous amount of simple histology still remains to be worked out upon the uterus. When this has been accomplished I have no doubt that much light will be thrown upon these various forms of growth which differ so widely in their microscopic appearance, and I believe in their practical value from the point of view of prognosis.

CHAPTER VII.

THE OPERATIVE TREATMENT OF CANCER OF THE CERVIX.

At the time of writing perhaps there is no more vexed question occupying the minds of gynaecologists than the treatment of cancer of the uterus. As in all methods of treatment, the diametrically opposed have their supporters. There are men who at the present date vouch for the excellent results of cervical amputation, whilst their opponents plead for removal of almost all the superimposed soft tissues of the pelvis. The only feature common to all seen by the observer is their ultimate ineffectiveness.

With regard to the operation of high amputation of the cervix for cancer, we find that the operation has become largely discarded owing to the fact that surgeons believed such cases to recur quickly, and the operation failed on account of its conservativeness.

It appears to me I cannot do better than show the diversity of results by extracting those of the leading observers of recent times.

Dr. Spencer, of London, I find, showed three apparent cures extending from seven to fifteen years, in treating the cases by high amputation.

L. H. Dunning, in the "American Journal of Obstetrics," 1902, quotes his 62 cases—30, of which 5, or 16 per cent., lived longer than five years; 32, of which 14 were living. In the five cases that survived five years the disease was in its infancy. In this second group two cases were advanced. Of these one was alive after four years; she had adeno-carcinoma, and was operated upon by the vaginal route. Vaginal hysterectomy was performed 57 times in 62 cases. Supra-vaginal method was performed in 5; of these 1 died of the operation, 2 died shortly afterwards, 2 were alive six months later. His percentage of cures was $16\frac{2}{3}$ per cent. He abandoned high amputation because of its futility.

Dr. Lockyer quoted a case to the Obstetrical Society of London where death from recurrence occurred immediately after apparent removal of growth by hysterectomy.

W. T. Burrage, in the "Boston Med. and Surg. Journal,"

thinks absolute cure of cancer of the uterus rare. By the best results only from 5—10 per cent. are well five years afterwards. He thinks the abdominal route the best.

J. H. Branham, in the "Amer. Journal," 1902, thinks the vaginal method the cleanest, easiest, safest.

Olshausen is in favour of vaginal hysterectomy because of the decreased mortality; further, if the glands be affected, neither route abdominal or vaginal will of necessity remove all. That Rosthorn was the only operator by the abdominal method with good results, *i.e.*, 2 deaths in 33 cases. Wertheim had had 24 deaths in 120 cases. Olshausen's results were: 38 per cent. alive after five years; 70 per cent. without recurrence in two years.

Dr. Lockyer, in 13 cases of vaginal hysterectomy for cancer of the cervix: recurrence in 7, no recurrence in 6; average number of pregnancies in each woman was 7.

Dr. Thos. Madden, of Dublin, in 1899, speaks of the depressing results of hysterectomy; he seemed to get as good results with high amputation of the cervix.

Dr. J. Halliday Croom, on vaginal hysterectomy for cancer, says his cases were eminently suitable for operation. They were chosen with care. Of 3 given as examples they were all dead of recurrence within a year. He believes in some cases vaginal hysterectomy actually shortens life.

Wertheim advocates the extensive abdominal operation. He admits (1) long operation; (2) 12 died from operation in 30 cases; (3) 5 died from operation in 27 cases; (4) ureter runs risk of necrosis. In 1905, at the B.M.A. meeting, the operation was described in detail. In his last 30 cases only 2 have been lost. The proportion of operable cases rises by this method from 15 per cent. to 50 per cent. by the older methods; 60·70 per cent. remained free from recurrence after four to five years' observation.

Howard Kelly (1905) supports Wertheim in his views.

Jacobs. "Results of Abdominal Hysterectomy with Removal of the Pelvic Glands in Cancer of the Cervix Uteri" ("Le Progrès Méd. Belge," June, 1904). Latest statistics of abdominal hysterectomy for cancer not encouraging. Jacobs gives 95 operations; 6 were lost sight of, 89 presented themselves, with 7 recoveries; 6 died of the operation; recurrence in 76; 50 per cent. recurred in 1st year, 21 per cent. recurred in 2nd year, 4·2 recurred in 3rd year, 2·1 per cent. recurred in 4th year, 2·1 per cent. recurred in 5th year. In 47 cases the recurrence was in the vaginal scar, in 29 the recurrence was

pelvic. Secondary growths in the thorax took place in 1 case, and secondary growths in the liver in another. Jacobs thinks the elements of recurrence are there before operation.

Sampson, "Bulletin of the Johns Hopkins Hospital," June, 1904, quotes: 60 per cent. of malignant disease were beyond operation. 143 operated upon; 21 died of operation; 14·6 mortality. Of 69 cases, three years after operation, 20 were alive; 6 of the 20 had recurrence: 78·2 per cent. of recurrences. 49 were alive after five years.

Hartman and Lecène, "Annales de Gynécologie et d'Obstétrique," March, 1905: Tend to show removal of glands practically impossible.

Dr. Campbell, of Belfast, speaking at the B.M.A., 1905, on Vaginal Hysterectomy for Cancer, says: "My own results by the vaginal route have been so bad that I have come to doubt whether, in well-marked cancer of the vaginal portion, it is worth while to put the patient through the danger and anxiety of complete vaginal hysterectomy. In those cases in which the disease is high in the cervical canal the vaginal method yields me a greater measure of success. Out of 50 cases operated on by me, not one has lived longer than three years."

Dr. Lewers: 33 supra-vaginal operations for cancer of the cervix; 28 vaginal hysterectomies; total, 61. Of the 33, 8 were free from recurrence four to fifteen years; of the 28, 6 were free from recurrence four to fifteen years; *i.e.*, 23 per cent. of cures.

Schuchardt recommends the paravaginal incision. Operated upon 14·7 per cent. of all comers. Had 24·5 per cent. cures of 62 per cent. operable cases. After five years, 26·4 per cent. were alive only. Of 30 cases, he had 5 deaths.

F. Freund states 15—20 per cent. of cures possible by vaginal hysterectomy.

Mackenrodt, by means of igni-extirpation by the vagina, claimed 42·8 per cent. of total cures.

Cullen. Squamous celled epithelioma: Cases in which hysterectomy was performed, 61; patients too late for operation, 62; total, 123. Number of cases living, 13, or 21 per cent. Adeno carcinoma: Hysterectomy performed, 12; patients living, 2, or 16 per cent.

On reviewing these preceding results one notices the tremendous diversity of opinion. I have taken examples largely from Continental, American, and English observers. One notices on certain points the trend of opinion is becoming against vaginal hysterectomy. Then, again, one notices that

the most reliable observers appear to have the worst results. Thus, Jacobs, Croom, and Campbell all appear to regard the vaginal operation as one giving depressing results. The percentage of cures varies from 5 to 70 per cent., a wonderful divergence.

Having given these previous results, I now propose to give my own, which are on a much smaller scale and more imperfect. On the other hand, each uterus has been most carefully examined; therefore, as far as my statistics go, I can vouch for their absolute honesty.

I had in all 41 vaginal hysterectomies, one abdominal hysterectomy. Of these, many I have been unable to trace. Of the remainder one has traced 35, of which 24 are dead of recurrence. The single case by the abdominal route is alive after five years, the remainder are living under fifteen months subsequent to operation.

Thus it will be seen that my best case was one of abdominal hysterectomy with removal of tubes, ovaries, and entire uterus. I would now venture to suggest, and I have not found this as yet mentioned, that this more radical operation—and mind, I do not mean the severe operation of Wertheim, but merely as occurred in this isolated case—gives a better chance of ultimate recovery, not only because of the removal of portions of the broad ligaments, but in the removal of the ovaries. There can be no doubt that double oophorectomy does in many cases retard the rate of growth of cancerous tissue. I think that although there has been much controversy on this subject, and many patients have not benefited by removal of the ovaries for malignant disease, yet, on the other hand, this is one of the few occasions where double oophorectomy might be practised along with the hysterectomy, and a slight, but still an appreciable, benefit be gained.

Further, I regret I have not had the time and opportunity to investigate the paravaginal method of hysterectomy. I believe that by this method an increased amount of vagina is removed with little or no increased risk to the patient; that as frequently the recurrence is in the vaginal scar, this method might be given a more extended trial; and, if Schuchardt's returns are correct, they are certainly better than those of vaginal hysterectomy.

To return for the moment to the discussion of the efficacy of vaginal hysterectomy. Whatever its claimants may hold, I am unable to account for my own results. Firstly, the greatest majority of my cases were admittedly early, and offered excel-

lent prospects for hysterectomy. Further, it will be seen, in the large proportion of cases, the technique offered no difficulty, and the patients' immediate recovery was rapid. Nevertheless, recurrence occurred with ultimate death. Therefore, I am compelled to assume that either I have been unlucky in the choice of my cases, which, it may be said, are those occurring in the last eight years, or that the statistics of other writers are not quite accurate. Now, of my apparent cures (Case 12 and another not given in detail), examination of their uteri throughout showed they were not malignant. The surgeon performed hysterectomy in each case in all good faith of malignancy. But only strict microscopical investigation shows such is not the case. Hence it is fair to assume that many of the so-called lasting cures obtained by vaginal hysterectomy for cancer of the cervix have occurred in cases that were not cancer, but some benign condition.

With regard to the Wertheim operation, I cannot as yet consider the results justify its severity. I would admit, without doubt, that there is an improved chance of ultimate cure by the more radical operation (though Jacobs's results were bad enough); on the other hand, I believe all that good could be obtained without that intense shock to the patient, the enormously increased mortality, that injury to the ureters so frequently occurring. It is far too extensive a dissection for a disease which, it is now becoming recognised, is so little influenced by surgical treatment. Until the results of an operation justify its procedure, it cannot be fairly said to be justifiable in any other manner whatsoever.

Now comes the question, does the patient benefit by operative treatment for cancer of the cervix? To this I would give an emphatic "Yes." Most of my cases lived a period of comparative health after their vaginal hysterectomy. At the most, a month is required to get over the operation, then the patient frequently at least enjoys a year of freedom from a foul hæmorrhagic discharge, and all the trying symptoms of uterine cancer. And if it is recognised that vaginal hysterectomy is a good, if not the best, palliative measure for cancer of the cervix, offering in some few isolated cases a chance of eventual cure, then the operation is a truly good one, and has been allocated to its proper sphere.

The ultimate treatment of cancer I do not believe will be operative; this growth of greatly potential protoplasm will not be limited by the knife. On the other hand, careful prophylaxis, the prevention of the part being subject to con-

tinuous katabolic changes, the knowledge of influencing factors on the growth of healthy material; these will eventually lead to the elimination of this terrible scourge from our midst.

In conclusion, I would suggest that hysterectomy, allied with oophorectomy, by the abdominal route be tried upon patients who wish for the greatest chance of ultimate cure; that the paravaginal method be given a more extended trial; that vaginal hysterectomy be allocated to its proper sphere, and not be considered a curative operation; and that by increasing care in our own professional work an earlier recognition of cancer of the uterus be attained. By these methods, with our present knowledge, may we hope to ameliorate the suffering of the unfortunate.

CHAPTER VIII.

CONCLUSION.

As a result of my observations, I have noted certain facts, and hope to have elucidated the following:—

1. The squamous epithelium lining the cervix, being variable, extends further up the cervical canal than has generally been supposed. That, when, for various reasons, ectropion of the cervix occurs, this squamous epithelium accordingly extends up the cervical canal still higher.

2. Apparently a most frequent situation for the malignant change is immediately near the junction of this squamous and the columnar epithelium; because in certain of my sections there was comparatively healthy squamous epithelium traced along the canal almost to the junction with columnar epithelium, but at this situation one found early cancer beginning.

3. That cancer of the cervix is a disease following, in the great majority of cases, chronic uterine mischief, of which metritis seems to be the most common example.

4. That there are distinct pathological varieties of cancer of the cervix, distinguishable microscopically, other than as yet described.

5. That sarcoma of the cervix is a less rare condition than is usually supposed. That this fact may tend to explain why malignant disease of the cervix is so rapid in its growth, and frequently so fatal in its variety.

6. That there is a different ratio of malignancy according to the type of growth; but that, owing to the extremely fatal nature of the disease, and the shortness of time that can be spent on observations, I have not proved this—that where keratinisation occurs widely an improved prognosis is offered for treatment.

7. That removal of the uterus alone by the vaginal route is most frequently a palliative, and not a curative measure.

8. That double oophorectomy, along with hysterectomy, might be given a trial.

In concluding, after an analysis of cases, pathology and results, I have come to the following view: Cancer of the cervix is an extremely malignant disease. There are certain distinct forms, however, which make greater attempts after their type and tend to lose some of their potentiality. These forms are certain varieties of squamous epitheliomata microscopically falling into the class described by Unna in his work

on the malignant tumours of the skin as cylindrical. They are a variety of this type which show a tendency to become senile by the conversion of the epithelium into keratin, keratohyalin, or hyalin.

That these have, in my cases, after hysterectomy, shown slightly better results. That those sections where the epithelium remained largely more embryonic, more potential, where I have been able to trace them, offered a worse prognosis.

With regard to treatment, I would suggest that a double ovariectomy be attempted along with the hysterectomy, and if the tissues can be more easily reached by the paravaginal method over the vaginal method, by this procedure.

If in the preceding pages there be given to the reader an increased view of this disease, a clearer idea of the pathological varieties of cancer of the cervix generally, one can lay down the pen, though reluctantly, nevertheless with a sense of knowledge both acquired and imparted, and with the hope that soon some observer will lighten the darkness which hangs over the subject known as Cancer.

BIBLIOGRAPHY.

- Abel. "Elastic Fibre and Growth." ("Archiv. für Gynäkol." 1901, No. 2).
- Ballock (E. A.). "The Limitation of Operative Intervention in Cancer of the Cervix." ("Amer. Jour. Obstet.," 1904).
- Condamin (R. and A.). "Vaginal Hysterectomy for Cancer of the Cervix during Pregnancy." ("Annales de Gyn. et d'Obstét.,").
- Craig (Daniel). "Early Detection of Uterine Cancer." ("New York Med. Journ.,").
- Clarke. ("Amer. Journ. Obstet.," 1904).
- Duncan (W.). "Cancerous Uterus removed by Vaginal and Abdominal Hysterectomy." ("B.M.J.," 1904).
- Dudley. "Diseases of Women."
- Emmanuel. "Simultaneous Occurrence of Glandular and Squamous Cancer of the Uterus." ("Zeits. Geburts. und Gynäkol.," 1901, 3).
- "Endothelioma of the Cervix Uteri." ("Johns Hopkins Bull.," 1898, ix.).
- Freund. ("Zeits. für Geburts. und Gynäkol.," 1901, 2).
- Gaylord and Ashoff "Principles of Pathological Histology."
- Goffe (J. Riddle). "Fibroids as a cause of Cancer." ("New York Obstet. Soc. Trans.,").
- Hart and Barbour. ("Manual of Gynæcol.,").
- Hartman and Lecène. "Glandular Invasion of Cancer of the Cervix." ("Annales de Gynécol.,").
- Hart (G. Berry). "Anatomy of the Uterus."
- Hall and Herzheimer. "Histological Methods."
- Jacobs. "Results of Abdominal Hysterectomy for Cancer, with Removal of the Pelvic Glands." ("Le Progrès Med.,").
- Jessett (Bowermann). "Cancer of the Cervix."
- Krauz. "The Radical Operation for Cancer of the Uterus." ("Brit. Gyn. Journal," Aug., 1903).
- Lindenthal (O. T.). "Ligation of the Hypogastric and Ovarian Arteries for Inoperable Cancer." ("Zeits. für Gynäkol.," 1903).

- Lewers. "Cancer of the Uterus."
 Mackenrodt. ("Monats. für Geburts. und Gynäkol.," Band xix.).
 Mackenrodt. ("Zeits. für Geburts. und Gynäkol.," 1901.).
 "Middlesex Hospital Reports."
 Napier (Leith). "The Menopause and its Disorders."
 Olshausen. "The Standpoint of Operation for Cancer of the Womb." (Address to B.M.A., 1904).
 Piquand (G.). "Fibroids and Cancer of the Uterus." ("Annales de Gynécol. et d'Obstet.," 1905).
 Piquand (G.). ("Rev. de Gynécol. et de Chirur. Abd.," 1905).
 "Quain's Anatomy." Article by Professor Schäfer on the Uterus.
 Routh (C. F.). "Treatment of Cancer." ("Brit. Gyn. Journ.," Aug., 1903).
 Reports of the Imperial Cancer Commission.
 Sinclair (Sir W. J.). "Malignant Diseases of the Uterus." (ex Albutt and Playfair).
 Schauta. ("Monats. für Geburts. und Gynäkol.," Feb., 1902).
 Sampson. "Complications of Operations." ("Johns Hopkins Bulletin," April, 1901).
 Sutton-Bland. "Cancer of the Uterus." ("Enclop.").
 Sutton-Bland. "Tumours."
 Thring (E. T.). "Cancer of the Uterus." ("Lancet," 1905).
 Smith (W. R.). "On the Structure of Epithelial Cell Nests." ("Journal of Pathology," 1904).
 Unna. "Malignancy of the Skin." (ex Dr. Norman Walker's Translation).
 Williams (Sir J.). "Cancer of the Uterus."
 Wertheim. "Operation for Cancer of the Uterus."
 Wakefield (T. B.). "The Abdominal and Pelvic Lymphatics in Cancer of the Uterus." ("Amer. Journ. of Obstet.").
 Williams (W. Roger). "Morphology of Uterine Cancer."
 "Ziegler's Pathology."



